Disclaimer: Information contained in the report addresses environmental conditions only and is not the official South Florida Water Management District operations recommendation or decision.

**M E M O R A N D U M**

**TO:** John Mitnik, Chief, Engineering and Construction Bureau
Paul Linton, Administrator, Water Control Operations Section

**FROM:** SFWMD Staff Environmental Advisory Team

**DATE:** November 3, 2015

**SUBJECT:** Weekly Environmental Conditions for Systems Operations

## Summary


Kissimmee

On Sunday, stages in East Lake Toho and Toho were ~0.9 and ~0.7 feet below schedule, respectively; Kissimmee-Cypress-Hatchineha (KCH) was 2.2 feet below schedule. Stage in KCH declined below 50.5 feet last week and is being reduced by up to 75 cfs/day following the zones in the discharge plan for S65/S65A (Figure 8a). Over the past week, discharge averaged 1315 cfs at S65 and 1135 cfs at S65A; discharge at S65E averaged 1770 cfs over the past week. Tuesday morning discharges: S65 ~970 cfs; S65A ~825 cfs; S65C ~1450 cfs; S65E ~1150 cfs. Dissolved Oxygen in the Kissimmee River averaged 4.25 mg/L over the past week and 4.23 mg/L on Sunday. Kissimmee River mean floodplain depth is currently 1.05 feet.

Lake Okeechobee

A slow recession in Lake stage continued over the past week. Lake stage is at 14.54 feet NGVD, in the Low Flow Sub-band and 0.04 feet NGVD above the Base Flow Sub-band. Ecological conditions are good.

Estuaries

Over past week, total freshwater inflow averaged 226 cfs to the St. Lucie with no releases from Lake Okeechobee and 1361 cfs to the Caloosahatchee with 462 cfs Lake releases. In the St. Lucie Estuary, salinity remained in the good range for adult oysters in the mid-estuary. In the Caloosahatchee Estuary, salinity increased and the conditions were in the good range for adult oysters at Cape Coral and Shell Point, and slightly above the upper limit of good range at Sanibel. Salinities were also in the good range for tape grass in the upper Caloosahatchee Estuary. Pulse releases averaging 200~500 cfs at S-80 and 650~1200 cfs at S-79 will help maintain salinities in the healthy ranges for adult oysters and submerged aquatic vegetation in both estuaries.

Everglades

Basin-wide stages decreased in most areas of the Everglades but increased in WCAs -2B and -3B. Water levels are decreasing relative to a month ago. The 30-day salinity at the Florida Bay Minimum Flows and Levels (MFL) site decreased slightly to 18.1 psu and the cumulative inflow from the five creeks into Florida Bay decreased to 104,168 acre-feet, again below the 105,000 acre-feet criterion. Much more rainfall is required to approach seasonally normal conditions in Florida Bay and Everglades National Park (ENP).

## Weather Conditions and Forecast

Some seabreeze activity returns this week. In general, a weaker extension of the Bermuda high will dominate our weather this week. Enough heating and moisture will pinwheel around the periphery of the high to allow some seabreeze showers and even a few storms to form. The best opportunity for showers/storms mainly over interior and western areas will be today, Wednesday, and Friday.

## KISSIMMEE BASIN

### Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.27 inches of rainfall in the past week and the Lower Basin received 0.73 inches (SFWMD Daily Rainfall Report 11/2/2015).

### Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table1.

**Table 1.** Departures from KCOL flood regulation (F) or temporary schedules (T, A, or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

**Report Date:** **11/3/2015**

| Water Body | Structure/Site | Discharge (cfs), week's average** | Stage Monitoring Site*** | Lake Stage (feet) | Schedule* | Regulation (R) or Target (S or T) Stage (feet) | Sunday Departure (feet) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 11/1/15 | 10/25/15 | 10/18/15 | 10/11/15 | 10/4/15 | 9/27/15 | 9/20/15 |
| Lakes Hart and Mary Jane | S62 | 0 | LKMJ | 60.4 | R | 61.0 | **-0.6** | -0.5 | -0.3 | 0.0 | -0.1 | -0.1 | 0.0 |
| Lakes Myrtle, Preston, and Joel | S57 | 19 | S57 | 61.5 | R | 62.0 | **-0.5** | -0.2 | -0.1 | -0.1 | 0.1 | -0.2 | 0.2 |
| Alligator Chain | S60 | 0 | ALLI | 63.2 | R | 64.0 | **-0.8** | -0.7 | -0.5 | -0.4 | -0.3 | -0.3 | -0.3 |
| Lake Gentry | S63 | 0 | LKGT | 61.2 | R | 61.5 | **-0.3** | -0.2 | -0.1 | -0.1 | -0.1 | -0.2 | -0.3 |
| East Lake Toho | S59 | 0 | TOHOE | 57.1 | R | 58.0 | **-0.9** | -0.7 | -0.4 | -0.1 | 0.0 | 0.3 | 0.8 |
| Lake Toho | S61 | 0 | TOHOW | 54.3 | R | 55.0 | **-0.7** | -0.6 | -0.4 | -0.1 | -0.1 | -0.2 | -0.1 |
| Lakes Kissimmee, Cypress, and Hatchineha | S65 | 1317 | LKISSP, KUB011, LKIS5B | 50.3 | R | 52.5 | **-2.2** | -1.7 | -1.1 | -0.5 | -0.2 | -0.3 | -0.2 |

* T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A= not applicable or data not available.

** Seven-day average of weighted daily means through Sunday midnight.

*** Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

DATA ARE PROVISIONAL

### Lower Kissimmee Basin

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 11. Kissimmee River floodplain stages at selected stations are shown in Figure 12.

**Table 2.** Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

**Report Date:** **11/3/2015**

| Metric | Location | Sunday's 1-day average | Weekly Average** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 11/1/15 | 10/25/15 | 10/18/15 | 10/11/15 | 10/4/15 | 9/27/15 | 9/20/15 | 9/13/15 | 9/6/15 | 8/30/15 |
| Discharge (cfs) | S-65 | 1089 | **1317** | 1593 | 1540 | 1370 | 1534 | 2329 | 3923 | 4603 | 4525 | 3970 |
| Discharge (cfs) | S-65A | 906 | **1133** | 1419 | 1457 | 1483 | 1694 | 2655 | 5089 | 6066 | 6098 | 4585 |
| Discharge (cfs) | S-65C | 1577 | **1713** | 1758 | 2151 | 2579 | 3300 | 4558 | 5476 | 5643 | 4961 | 3464 |
| Headwater stage (feet NGVD) | | 35.4 | **35.4** | 35.5 | 35.4 | 35.3 | 35.3 | 35.4 | 35.5 | 35.3 | 35.4 | 35.3 |
| Discharge (cfs) | S-65D**** | 1695 | **1978** | 1790 | 2291 | 2882 | 3891 | 5253 | 6193 | 6236 | 5553 | 3764 |
| Discharge (cfs) | S-65E | 1630 | **1771** | 1677 | 2203 | 2787 | 3853 | 5133 | 6064 | 5906 | 5323 | 3539 |
| DO concentration (mg/L)*** | Phase I river channel | 4.23 | **4.25** | 4.18 | 2.50 | 1.65 | 0.93 | 0.74 | 0.34 | 0.58 | 0.68 | 0.97 |
| Mean depth (feet)* | Phase I floodplain | **1.05** | N/A | 1.17 | 1.25 | 1.44 | 1.64 | 2.06 | 2.76 | 2.80 | 2.89 | 2.24 |

* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

** Seven-day average of weighted daily means through Sunday midnight.

*** DO is the average for PC62 and PC33 starting June 2.PC33 omitted for week of Aug16. DO for week of Sept 15-22 is for PC33 only.

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2

***** 1-day spatial average from field measurements in Pools A and BC

N/A Not applicable or data not available.

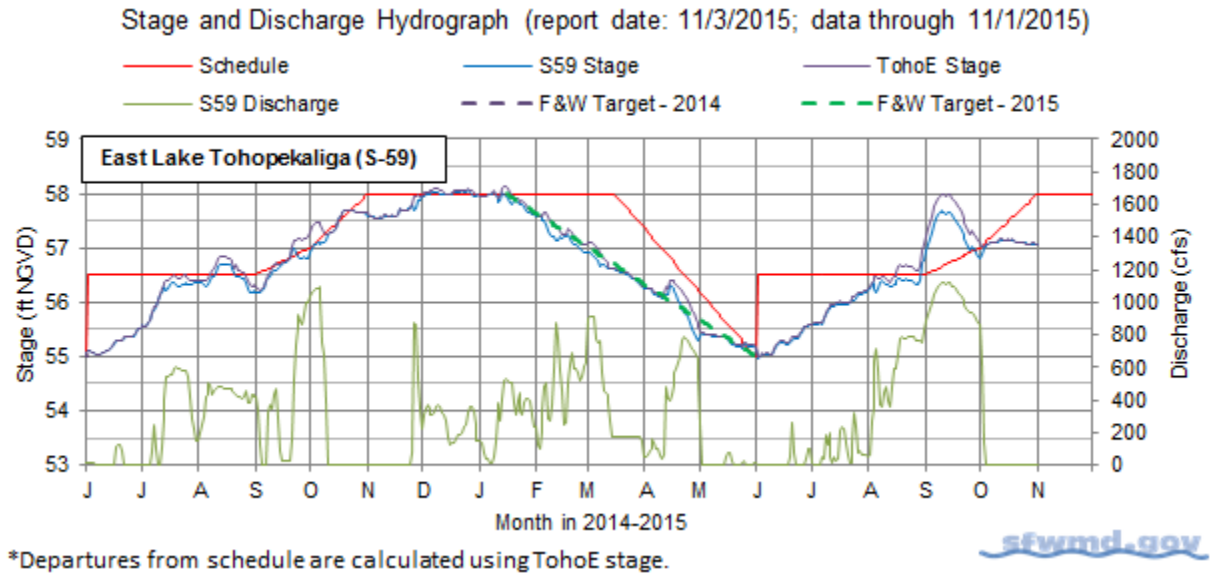
DATA ARE PROVISIONAL

## Water Management Recommendations

**Kissimmee Basin Recommendations and Operational Actions**

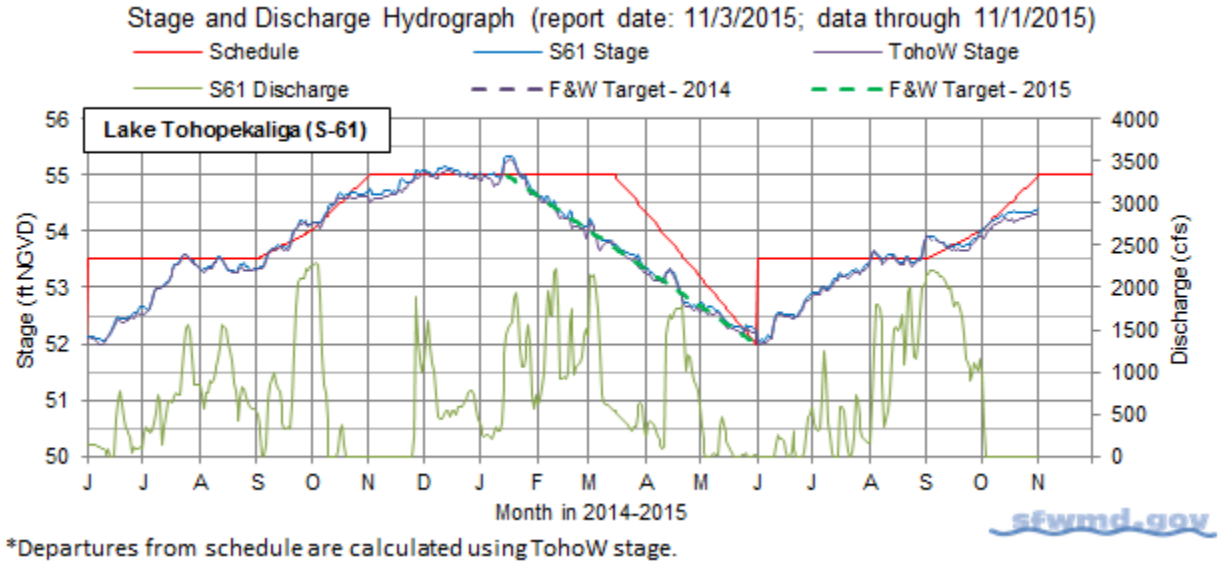
| Date | Recommendation | Purpose | Outcome | Source |
|---|---|---|---|---|
| **11/3/2015** | No new recommendations. | | | |
| **10/27/2015** | No new recommendations. | | | |
| **10/20/2015** | No new recommendations. | | | |
| **10/13/2015** | No new recommendations. | | | |
| **10/6/2015** | No new recommendations. | | | |
| **9/28/2015** | No new recommendations. | | | |
| **9/22/2015** | No new recommendations. | | | |
| **9/15/2015** | No new recommendations. | | | |
| **9/8/2015** | No new recommendations. | | | |
| **9/1/2015** | No new recommendations. | | | |
| **8/25/2015** | No new recommendations. | | | |
| **8/18/2015** | No new recommendations. | | | |
| **8/11/2015** | No new recommendations. | | | |
| **8/4/2015** | No new recommendations. | | | |
| **7/28/2015** | No new recommendations. | | | |
| **7/14/2015** | No new recommendations. | | | |
| **6/30/2015** | No new recommendations. | | | |
| **6/23/2015** | No new recommendations. | | | |
| **6/16/2015** | No new recommendations. | | | |
| **6/9/2015** | No new recommendations. | | | |
| **6/1/2015** | For S65/65A maintain 300 cfs as long as stage is above 48.5 ft. When stage approaches 50.5 ft begin transitioning to 1400 cfs using the rampup/rampdown guidelines in standing recommendation. | Allow KCH lake stage to rise | Implemented | KB Operations |
| **5/29/2015** | 2015 KB Wet Season Standing Recommendations provided to Operations Control | Comprehensive wet season guidance | Implemented | KB Operations |
| **5/26/2015** | No new recommendations. | | | |
| **5/19/2015** | No new recommendations. | | | |
| **5/12/2015** | No new recommendations. | | | |
| **5/5/2015** | No new recommendations. | | | |
| **4/7/2015** | No new recommendations. | | | |

## KCOL Hydrographs (through Sunday midnight)



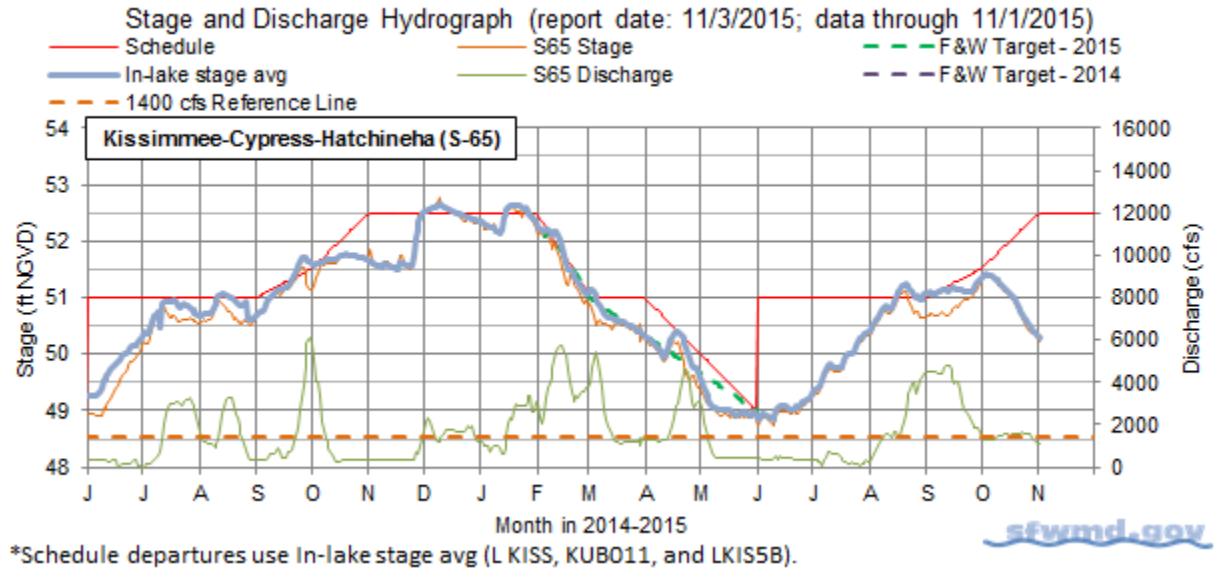

*Departures from schedule are calculated using TohoE stage.

**Figure 1.**



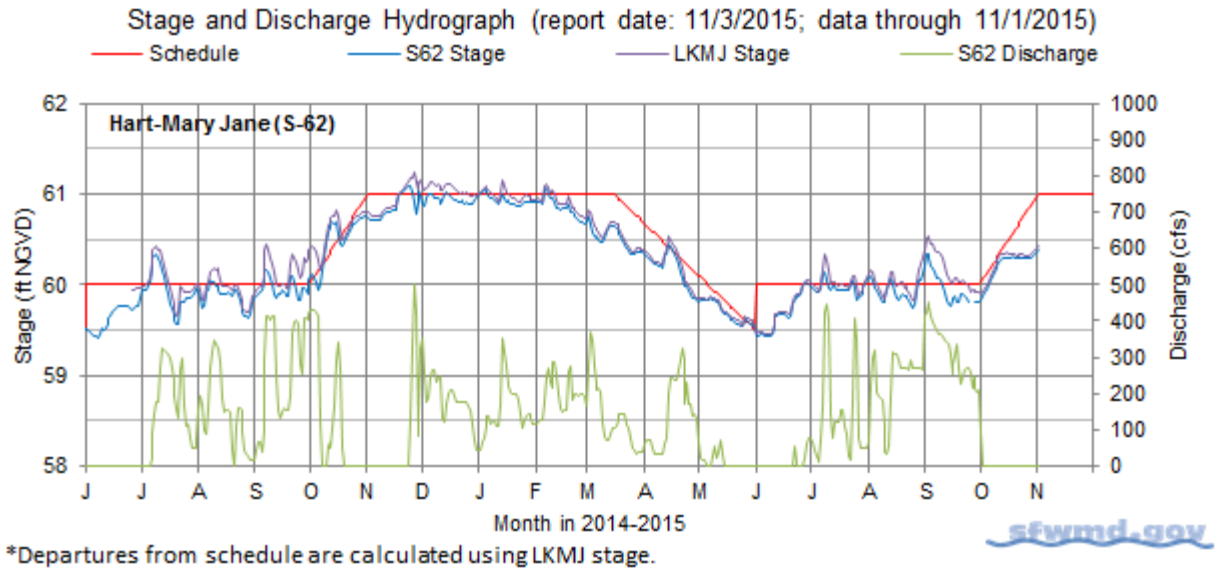

*Departures from schedule are calculated using TohoW stage.

**Figure 2.**



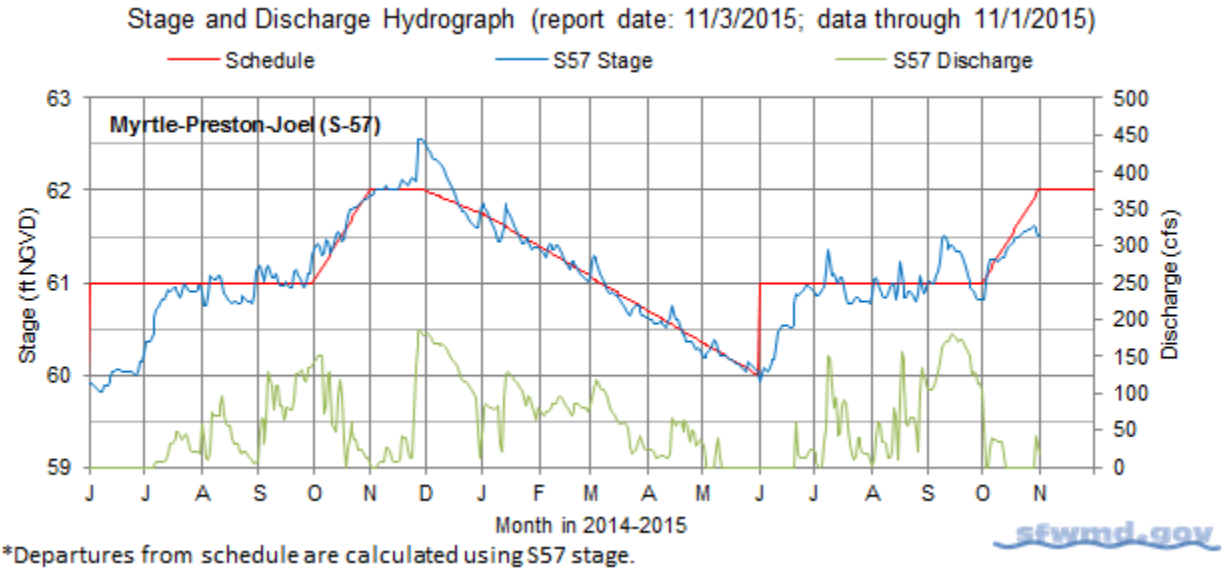

*Schedule departures use In-lake stage avg (L KISS, KUBO11, and LKIS5B).

**Figure 3.**



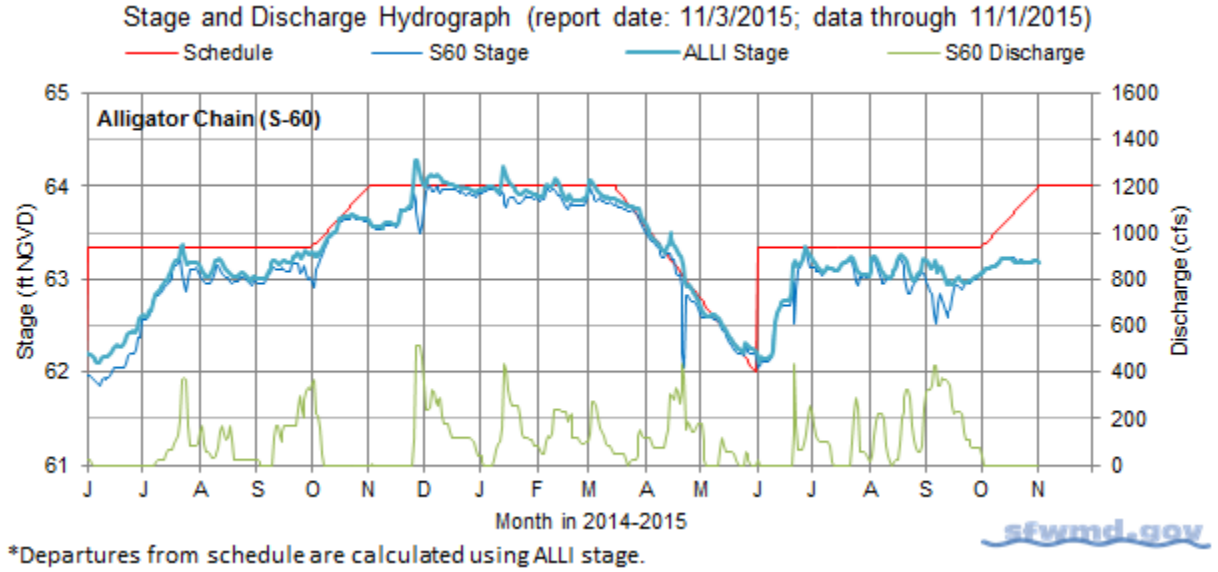

*Departures from schedule are calculated using LKMJ stage.

**Figure 4.**




*Departures from schedule are calculated using S57 stage.

**Figure 5.**




*Departures from schedule are calculated using ALLI stage.

**Figure 6.**

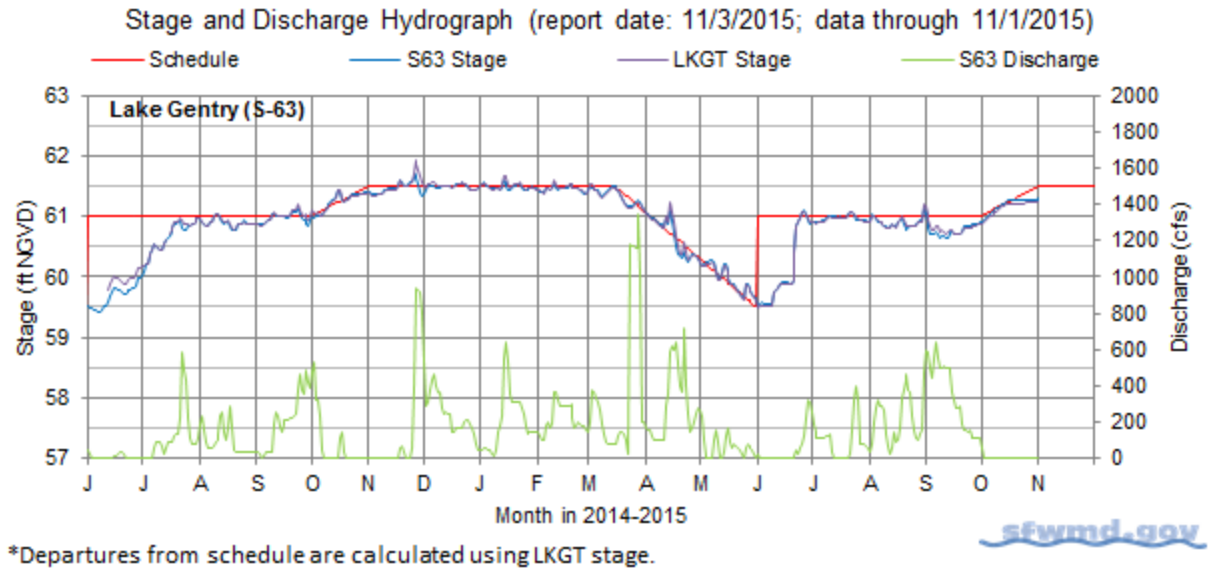



**Figure 7.**

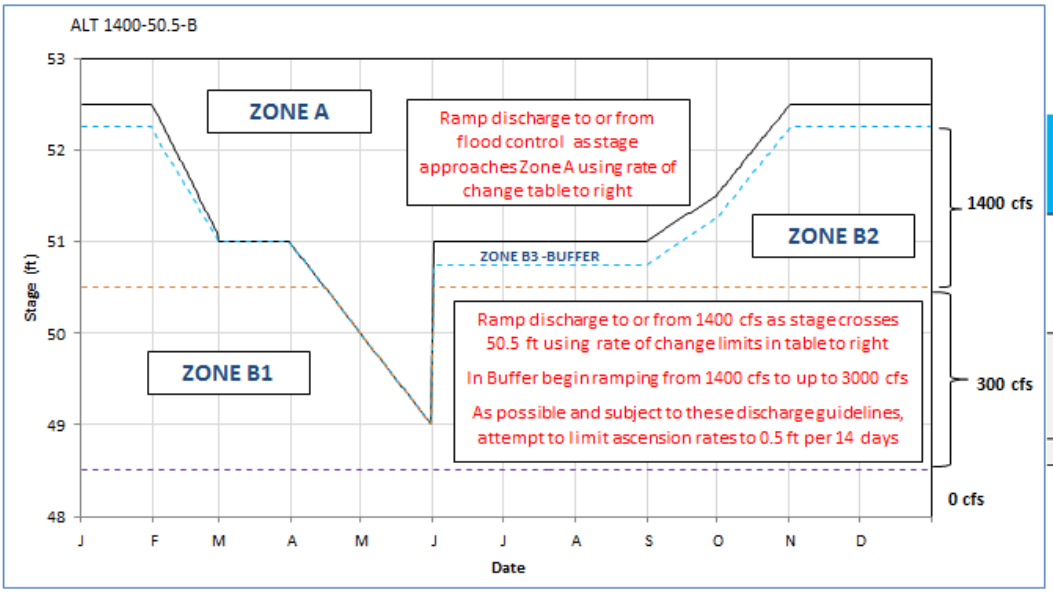



**Table 1. Discharge Rate of Change Limits for S65/S65A**
****Rate limits apply only in Zone B****

| | Q (cfs) | Maximum rate of increase (cfs/day) | Maximum rate of decrease (cfs/day) |
|---|---|---|---|
| Zone B | 0-300 | 50 | -50 |
| | 300-1400 | 150 | -75 |
| | 1400-2500 | 300 | -300 |
| | 2500-3000 | 1000 | -1000 |
| Zone A | No limits | | |

**Figure 8a.** Final S-65 operational plan for Wet Season 2015.

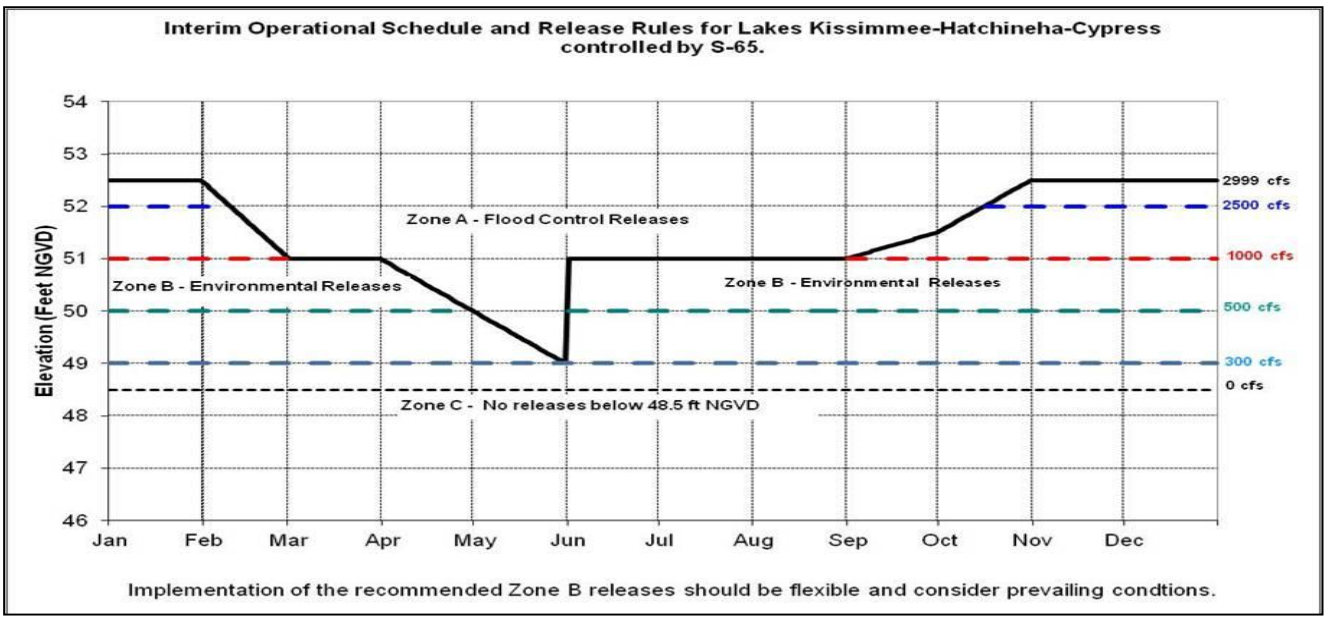



**Figure 8b.** Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

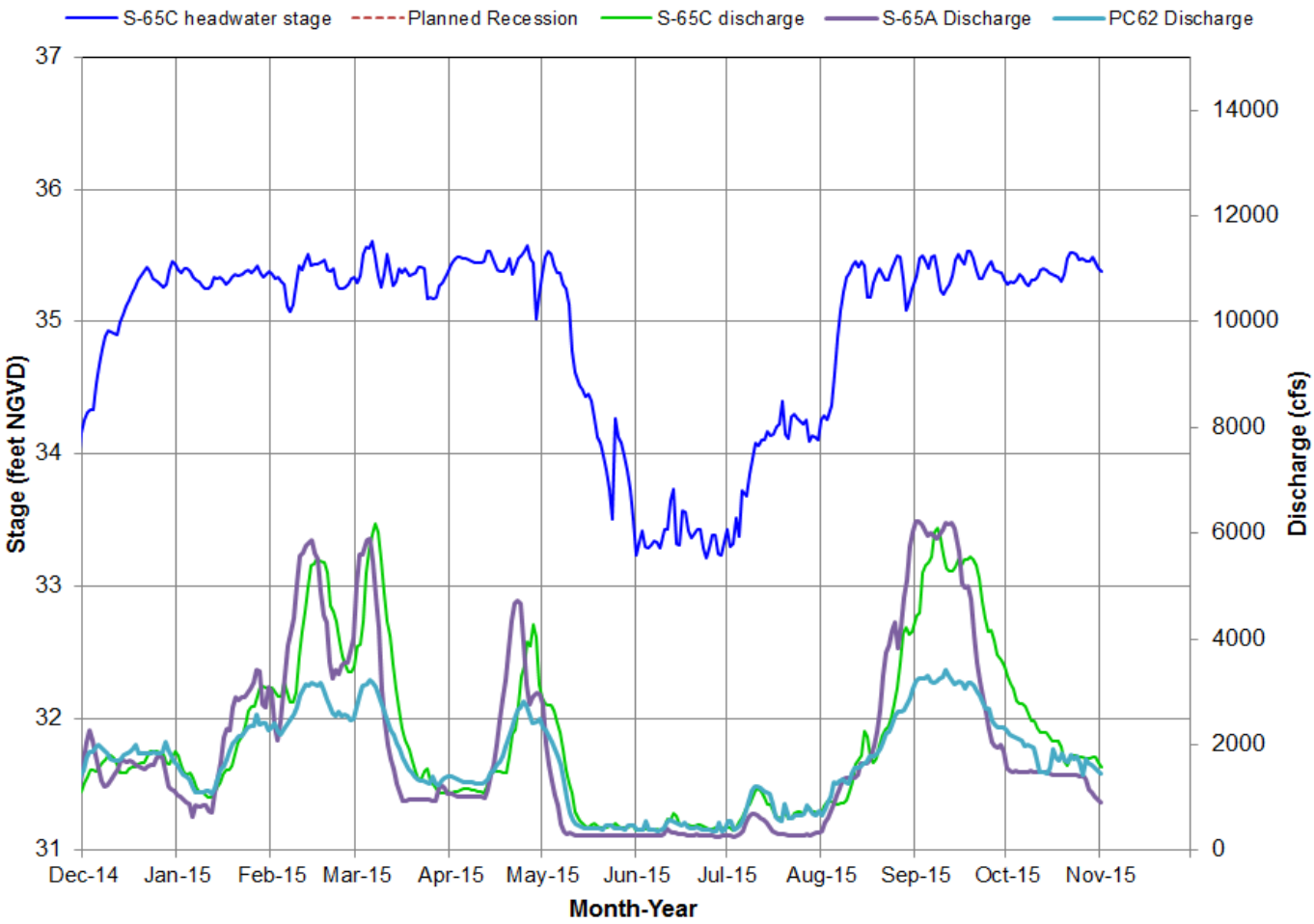



**Figure 9.** S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

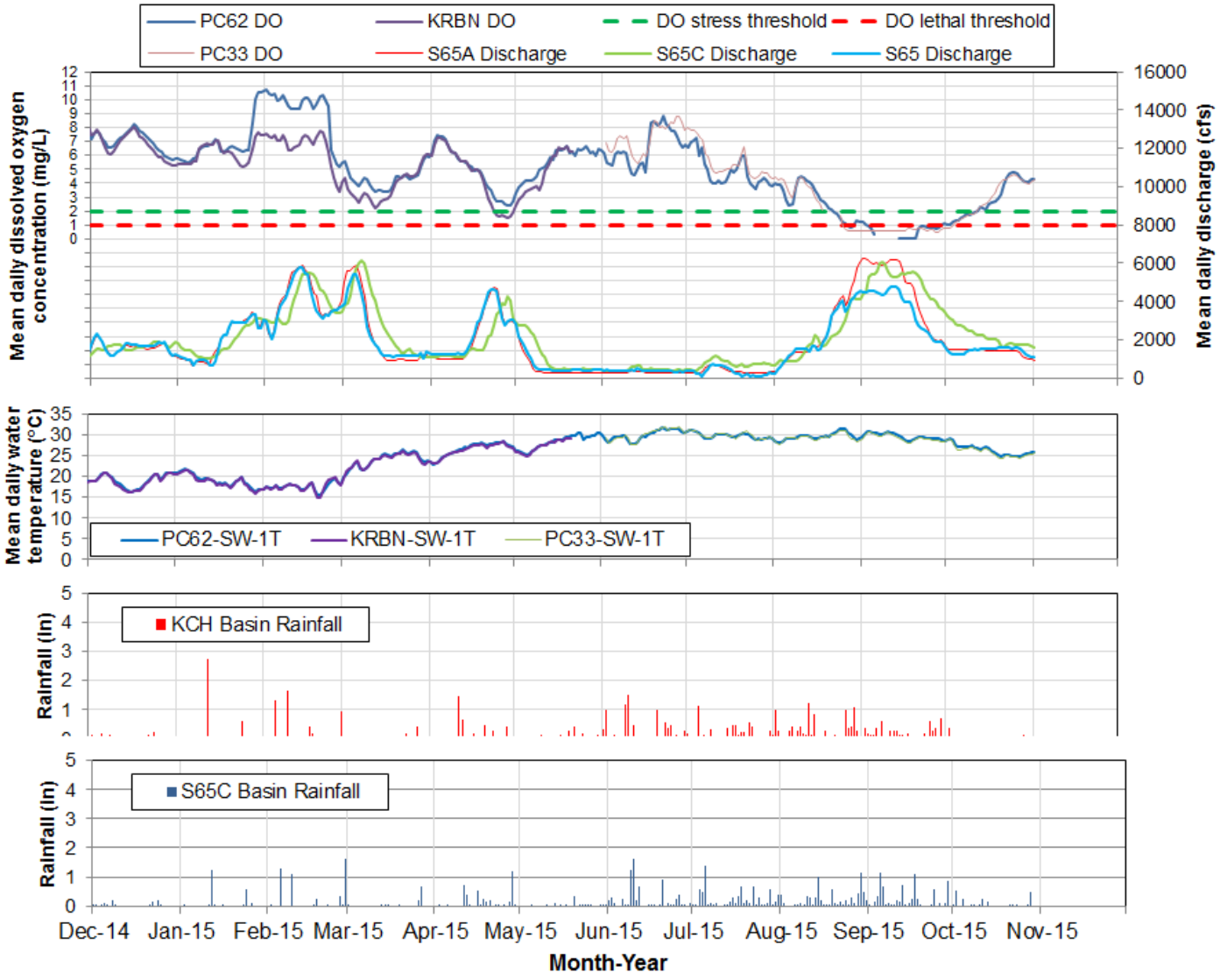
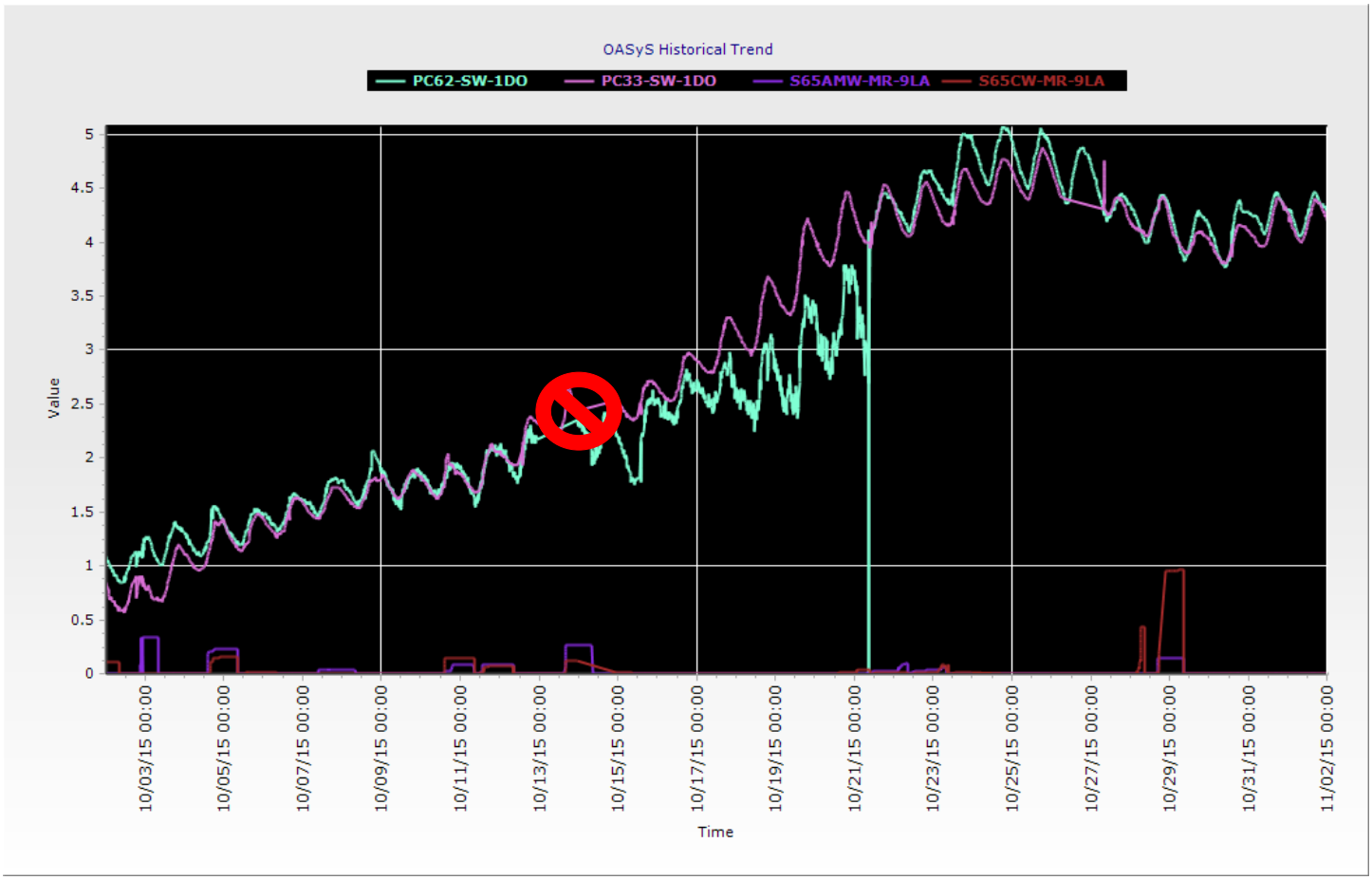



**Figure 10.** Mean daily DO, discharge, temperature and rainfall in the Phase I river channel.




**Insert A.** Phase I river channel DO (measured at 15 minute intervals) and rainfall at S-65A and S-65C.

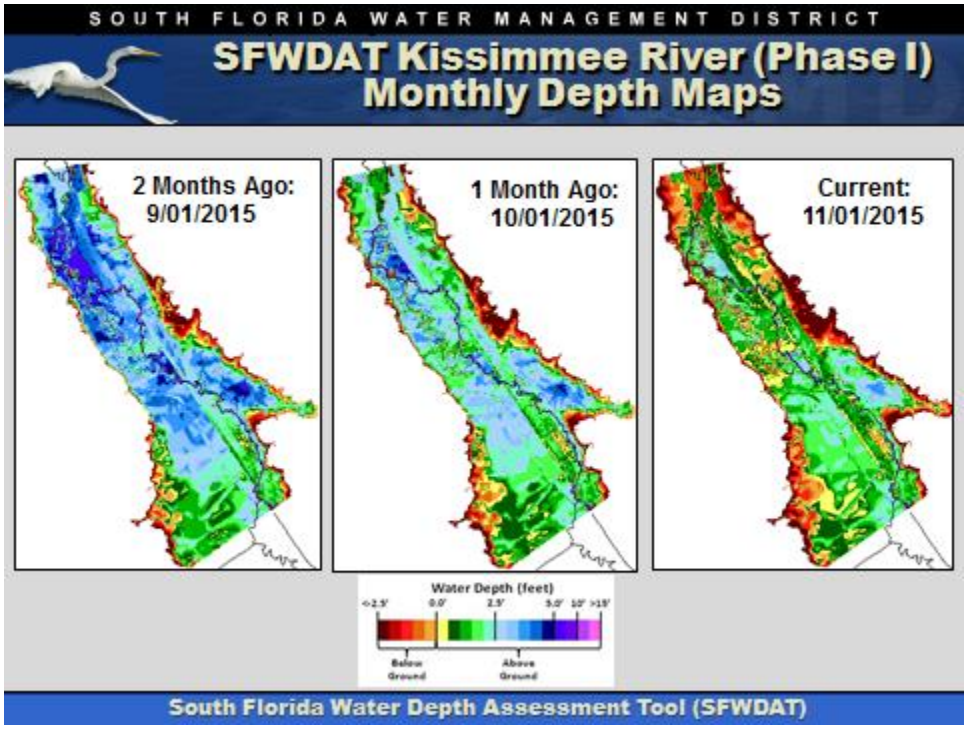



**Figure 11.** Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.

## Kissimmee River Hydrographs

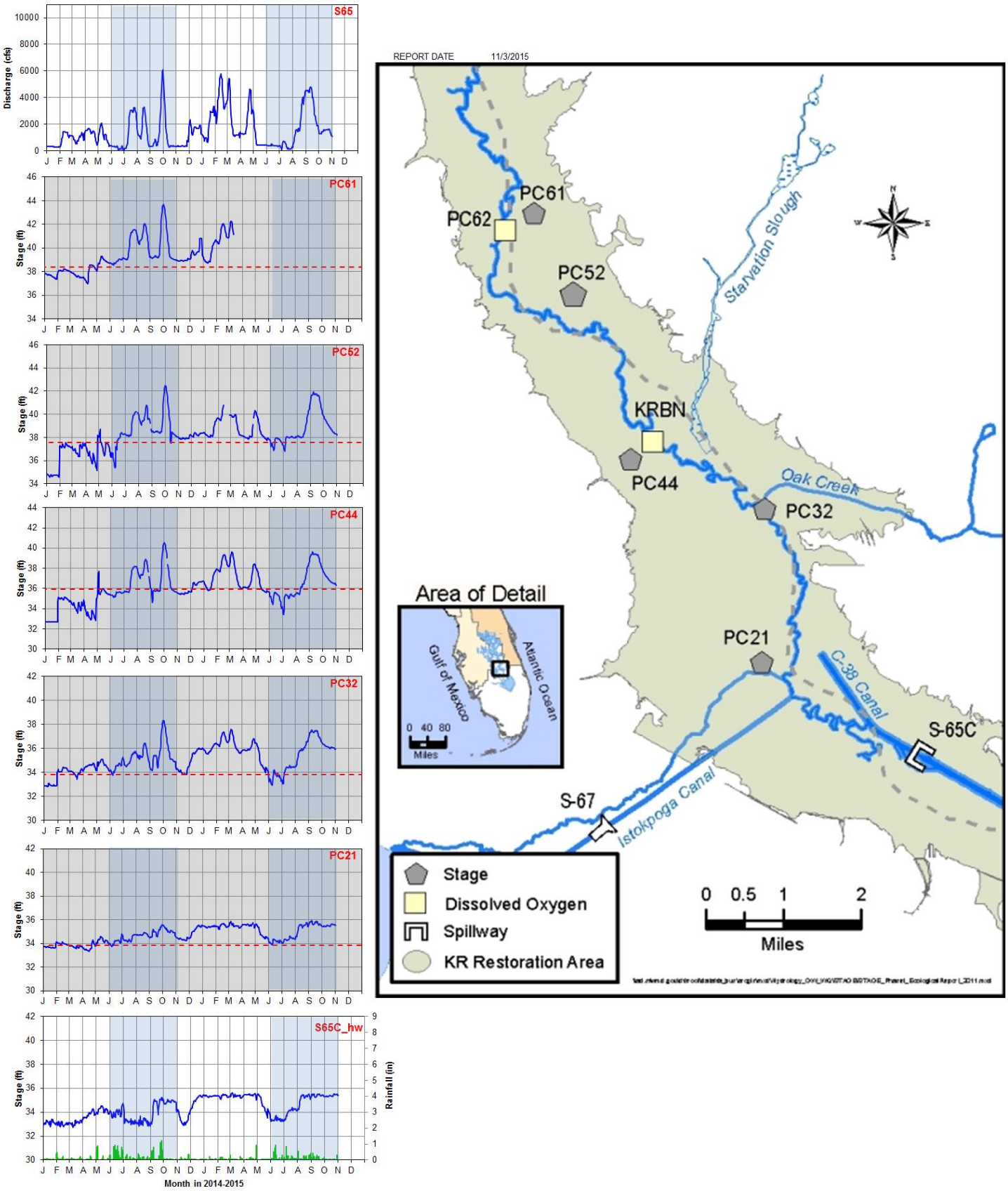



**Figure 12.** Discharge at S-65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S-65-C since January 1, 2013. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

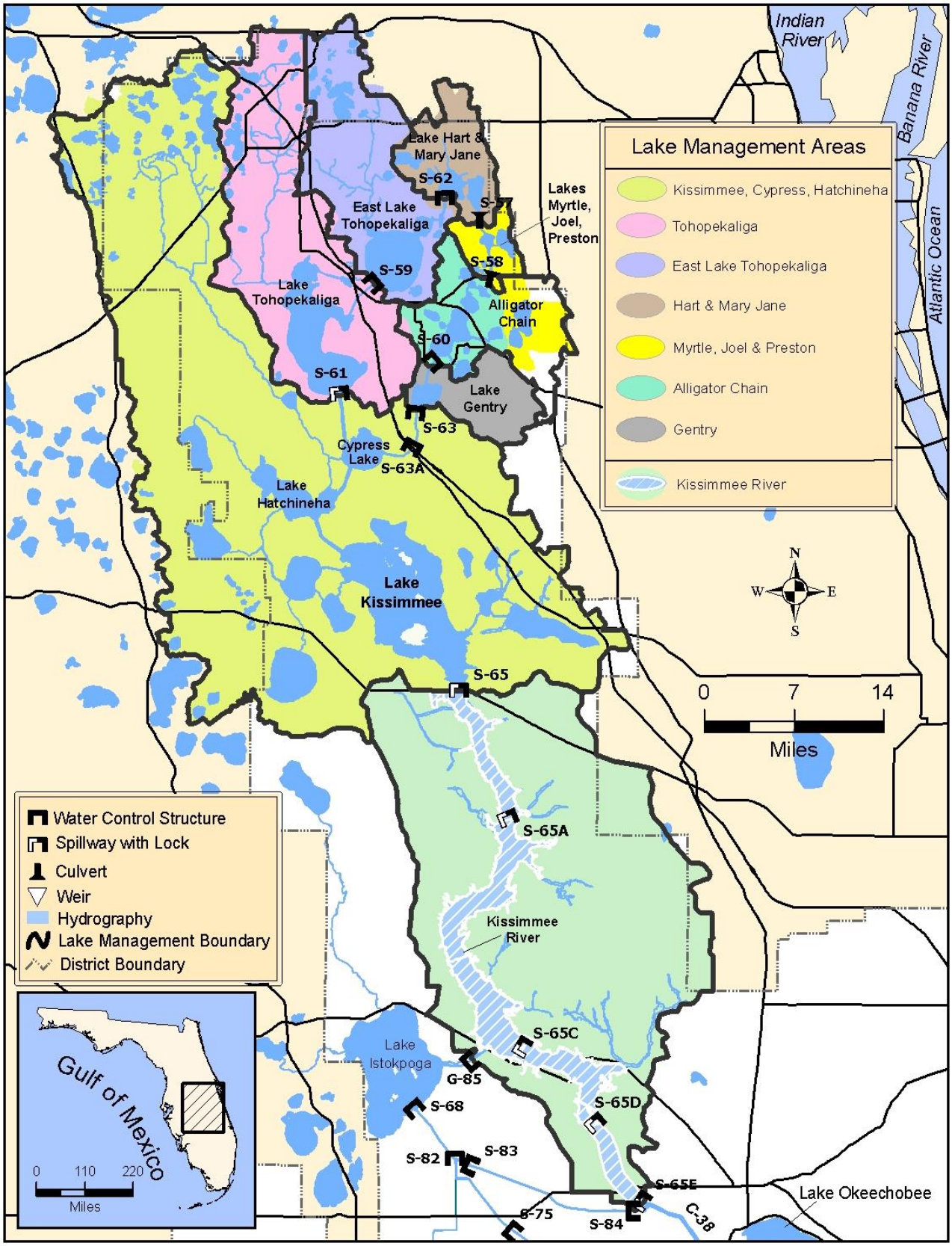



**Figure 13.** The Kissimmee Basin.

## LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 14.54 feet NGVD for the period ending at midnight on November 2, 2015. Lake stage decreased by 0.05 feet over the past week. The Lake is 0.25 feet lower than it was a month ago and 1.22 feet lower than it was a year ago (Figure 1). The Lake is in the Low Flow Sub-band but only 0.04 feet from the top of the Base Flow Sub-band (Figure 2). According to RAINDAR, 0.082 inches of rain fell directly over the Lake during the past seven days. Similar amounts of rain fell in much of the watershed, with higher amounts falling in northern and western portions of the watershed (Figure 3).

Based on USACE reported values, current Lake inflow is approximately 2696 cfs, consisting of inflows as indicated below.

| Structure | Flow cfs |
|---|---|
| S65E | 1754 |
| S154 | 0 |
| S84 & 84X | 775 |
| S71 | 0 |
| S72 | 0 |
| C5 | 0 |
| S191 | 0 |
| S133 PUMPS | 0 |
| S127 PUMPS | 0 |
| S129 PUMPS | 0 |
| S131 PUMPS | 0 |
| S135 PUMPS | 0 |
| Fisheating Creek | 167 |
| S2 Pumps | 0 |
| S3 Pumps | 0 |
| S4 Pumps | 0 |

Current Lake outflow is approximately 3591 cfs exiting through S-77 (998 cfs), S-351 (1310 cfs), S-352 (771 cfs) S-354 (333 cfs) and to the L8 canal through Culvert 10A (179 cfs). Corrected evapotranspiration this past week was equivalent to an outflow of 944 cfs.

Change in elevation equivalents and average weekly flows for major structures are presented in Figure 4.

Based on MODIS satellite imagery, low to moderate chlorophyll concentrations appear to be occurring in the west and northwest portions of the nearshore region (Figure 5). Apparent elevated chlorophyll concentrations in the southwest and eastern portions of the nearshore region in the November 1 image may be light cloud cover, as suggested by the corresponding true color image.

On November 2, 2015, the Florida Fish and Wildlife Conservation Commission conducted a controlled burn of dense cattail in the Moonshine Bay region of Lake Okeechobee (Figure 6). The map to the left of the slide indicates the burn prescription of 7000 acres, including approximately 900 acres (green area) that had been previously treated with herbicide by SFWMD. Preliminary reports indicate that approximately 6000 acres were burned. The exact geographic extent of the burn will be determined within the next several weeks. Historically, this area was mostly open spike rush marsh but had been invaded by cattail after the hurricanes of 2004-2005. The area is important wading bird habitat, being

in close proximity to several important recent and historic rookeries, and it is anticipated that the burn will restore the area to the more open marsh conditions required for successful wading bird foraging.

## Water Management Recommendations

A slow recession in Lake levels continues. The current monthly rate of change is within the preferred range of no more than 0.5 feet per month. Any activities that contribute to maintaining the recession would be ecologically beneficial.

Future recommendations for the short term will depend in large measure on the near-term rainfall patterns and amounts. The operational goal continues to be to maintain a steady decrease in water levels not to exceed 0.5 feet per month (0.125 feet/week), avoid reversals in stage, and achieve a Lake stage of approximately 12.5 feet NGVD prior to the onset of the summer ascension in stage.

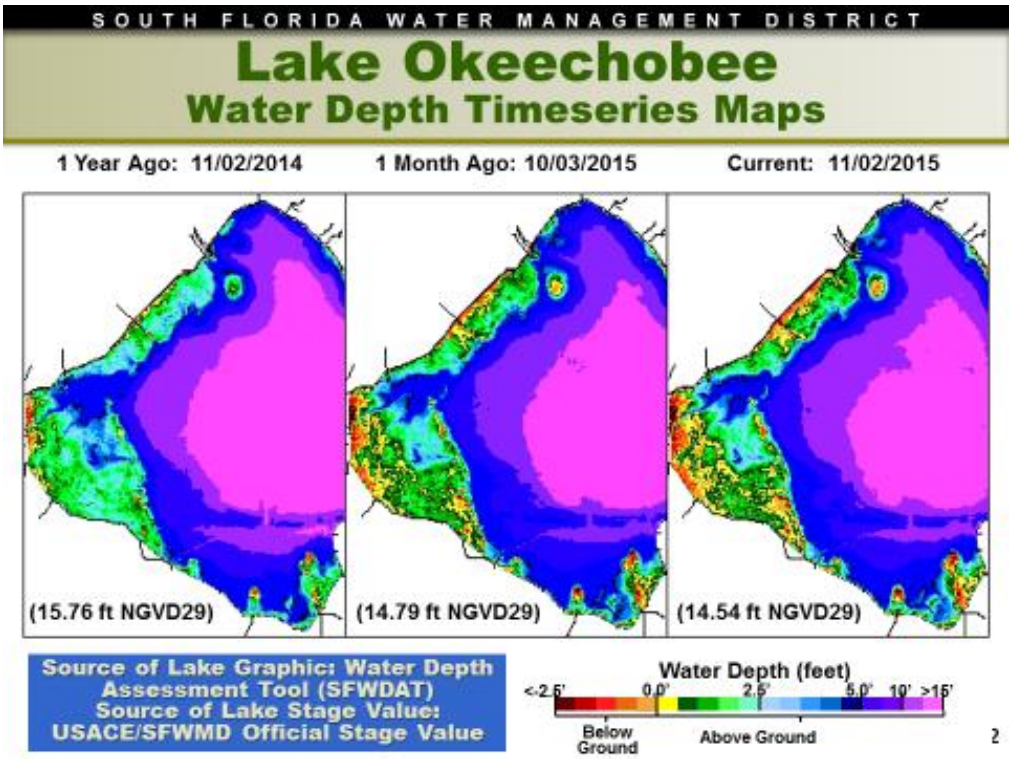



Figure 1

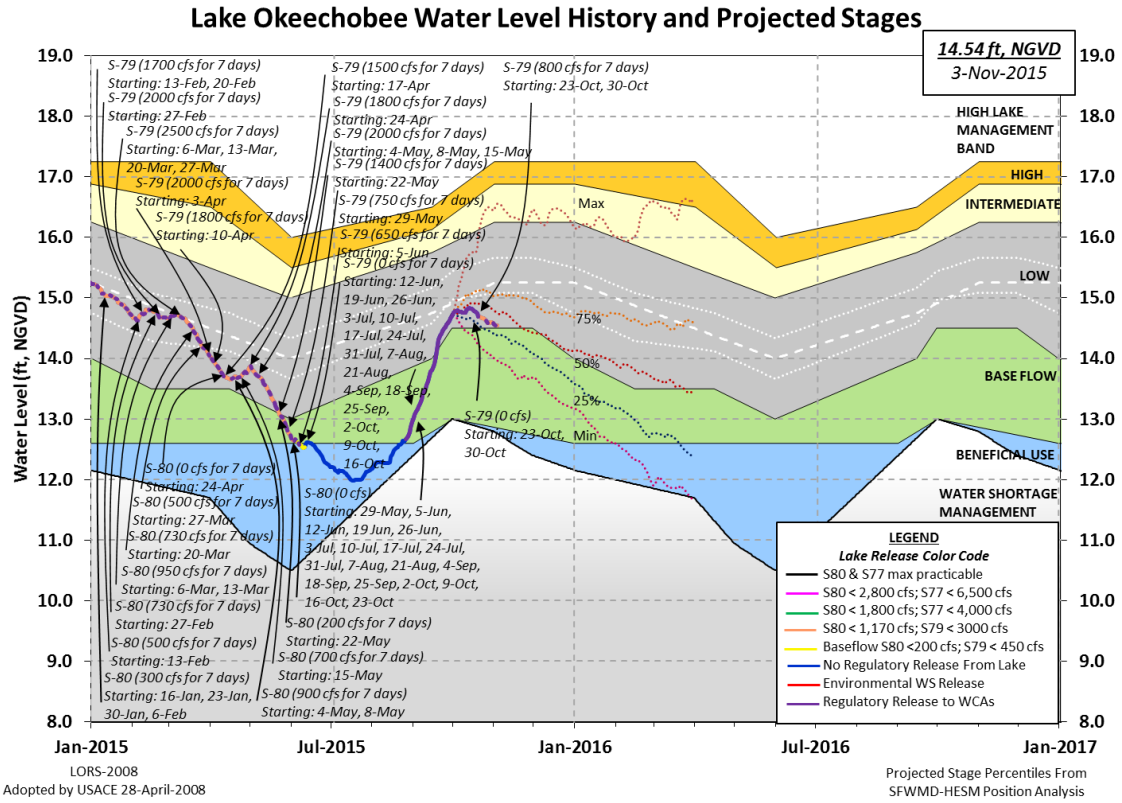

Lake Okeechobee Water Level History and Projected Stages
14.54 ft, NGVD
3-Nov-2015
Water Level (ft, NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
Max
75%
50%
25%
Min
S-79 (1700 cfs for 7 days) Starting: 13-Feb, 20-Feb
S-79 (2000 cfs for 7 days) Starting: 27-Feb
S-79 (2500 cfs for 7 days) Starting: 6-Mar, 13-Mar, 20-Mar, 27-Mar
S-79 (2000 cfs for 7 days) Starting: 3-Apr
S-79 (1800 cfs for 7 days) Starting: 10-Apr
S-79 (1500 cfs for 7 days) Starting: 17-Apr
S-79 (1800 cfs for 7 days) Starting: 24-Apr
S-79 (2000 cfs for 7 days) Starting: 4-May, 8-May, 15-May
S-79 (1400 cfs for 7 days) Starting: 22-May
S-79 (750 cfs for 7 days) Starting: 29-May
S-79 (650 cfs for 7 days) Starting: 5-Jun
S-79 (0 cfs for 7 days) Starting: 12-Jun, 19-Jun, 26-Jun, 3-Jul, 10-Jul, 17-Jul, 24-Jul, 31-Jul, 7-Aug, 21-Aug, 4-Sep, 18-Sep, 25-Sep, 2-Oct, 9-Oct, 16-Oct
S-79 (800 cfs for 7 days) Starting: 23-Oct, 30-Oct
S-79 (0 cfs) Starting: 23-Oct, 30-Oct
S-80 (0 cfs for 7 days) Starting: 24-Apr
S-80 (500 cfs for 7 days) Starting: 27-Mar
S-80 (730 cfs for 7 days) Starting: 20-Mar
S-80 (950 cfs for 7 days) Starting: 6-Mar, 13-Mar
S-80 (730 cfs for 7 days) Starting: 27-Feb
S-80 (500 cfs for 7 days) Starting: 13-Feb
S-80 (300 cfs for 7 days) Starting: 16-Jan, 23-Jan, 30-Jan, 6-Feb
S-80 (0 cfs) Starting: 29-May, 5-Jun, 12-Jun, 19 Jun, 26-Jun, 3-Jul, 10-Jul, 17-Jul, 24-Jul, 31-Jul, 7-Aug, 21-Aug, 4-Sep, 18-Sep, 25-Sep, 2-Oct, 9-Oct, 16-Oct, 23-Oct
S-80 (200 cfs for 7 days) Starting: 22-May
S-80 (700 cfs for 7 days) Starting: 15-May
S-80 (900 cfs for 7 days) Starting: 4-May, 8-May
LEGEND
Lake Release Color Code
S80 & S77 max practicable
S80 < 2,800 cfs; S77 < 6,500 cfs
S80 < 1,800 cfs; S77 < 4,000 cfs
S80 < 1,170 cfs; S79 < 3000 cfs
Baseflow S80 <200 cfs; S79 < 450 cfs
No Regulatory Release From Lake
Environmental WS Release
Regulatory Release to WCAs
LORS-2008
Adopted by USACE 28-April-2008
Projected Stage Percentiles From
SFWMD-HESM Position Analysis

Figure 2

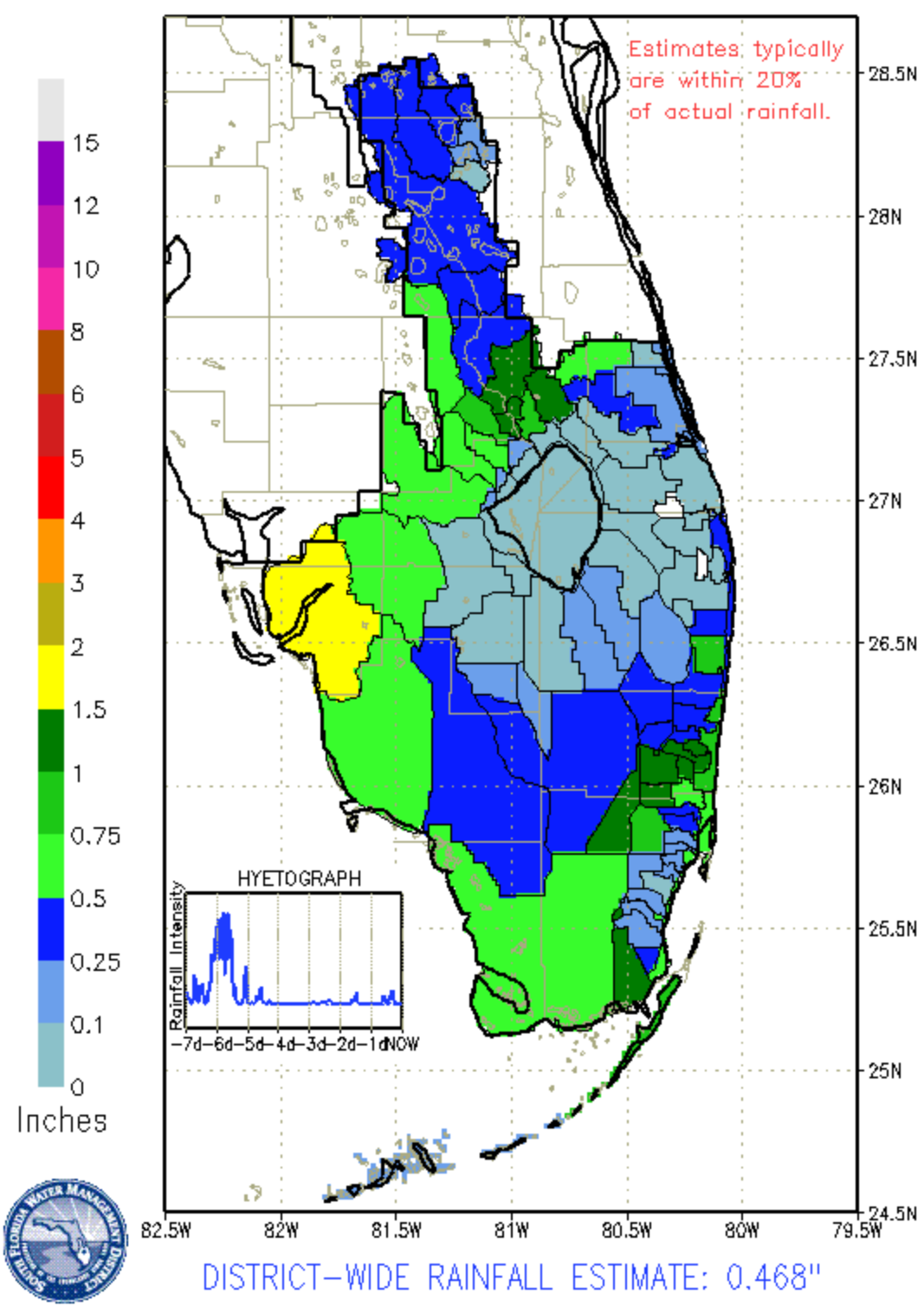

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0630 EST, 10/27/2015 THROUGH: 0630 EST, 11/03/2015
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1d NOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 0.468"

Figure 3

| INFLOWS | Average Daily Flow Past Week cfs | Feet of Change Past Week |
|---|---|---|
| S65E | 1707 | 0.057 |
| S71 & 72 | 1 | 0.000 |
| S84 & 84X | 686 | 0.023 |
| Fisheating Creek | 1411 | 0.007 |
| Rainfall | N.A. | 0.007 |
| **OUTFLOWS** | **Average Daily Flow Past Week cfs** | **Feet of Change Past Week** |
| S77 | 527 | 0.018 |
| S308 | 114 | 0.004 |
| S351 | 1036 | 0.035 |
| S352 | 1009 | 0.034 |
| S354 | 256 | 0.009 |
| L8 | 232 | 0.008 |
| ET | 944 | 0.032 |

Figure 4

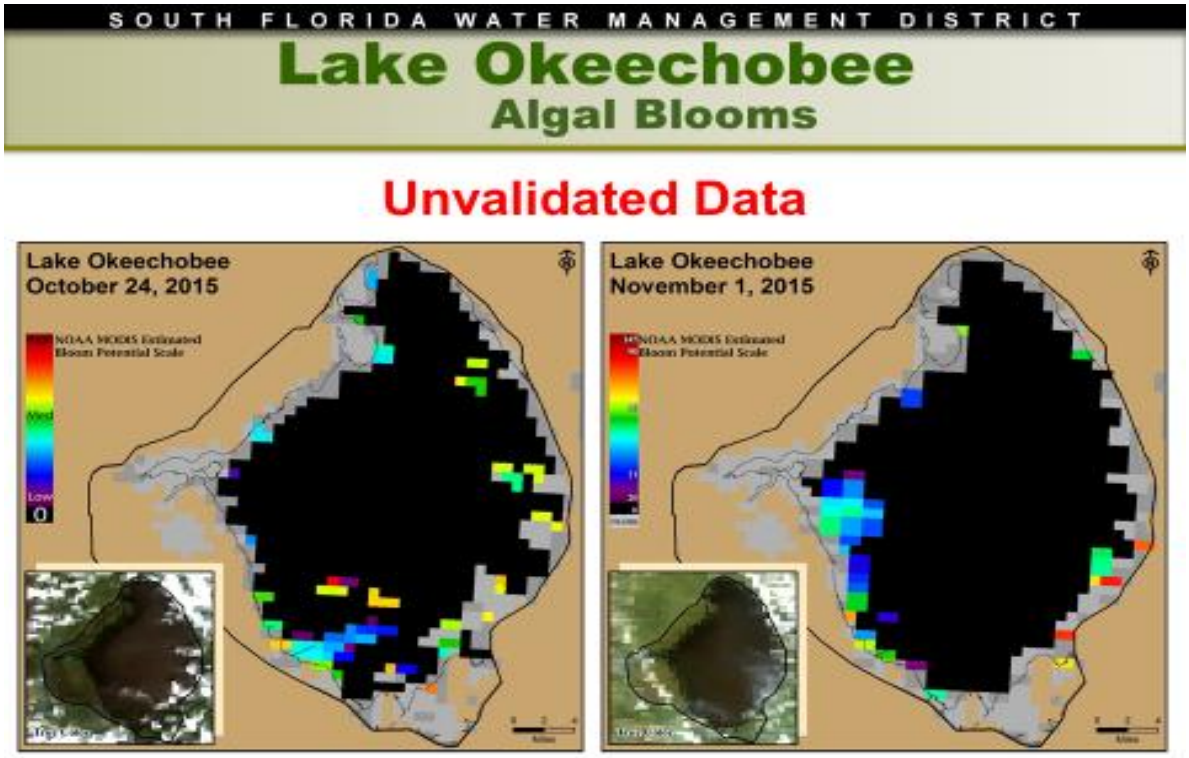



Figure 5

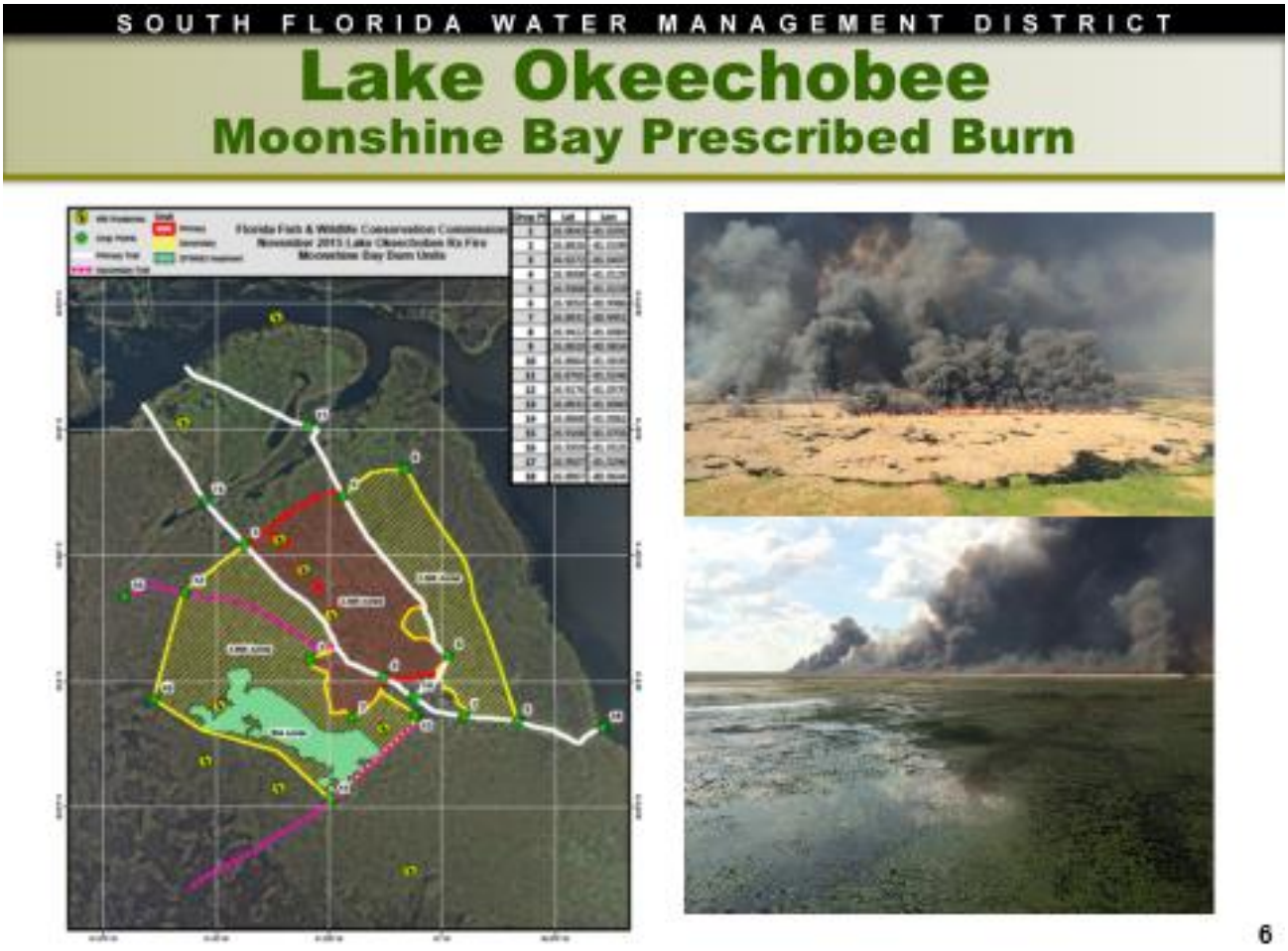



Figure 6

**Lake Istokpoga**

Lake Istokpoga stage is 39.33 feet NGVD today and is currently 0.17 feet below its regulation schedule of 39.50 feet NGVD, which is peak high pool (Figure 7). Average flows into the Lake from Arbuckle and Josephine creeks were 522 and 103 cfs respectively, approximately the same as last week. Average discharge from S-68 and S-68X this past week was 836 cfs, an increase of 481 cfs from the preceding week. According to RAINDAR, 0.55 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

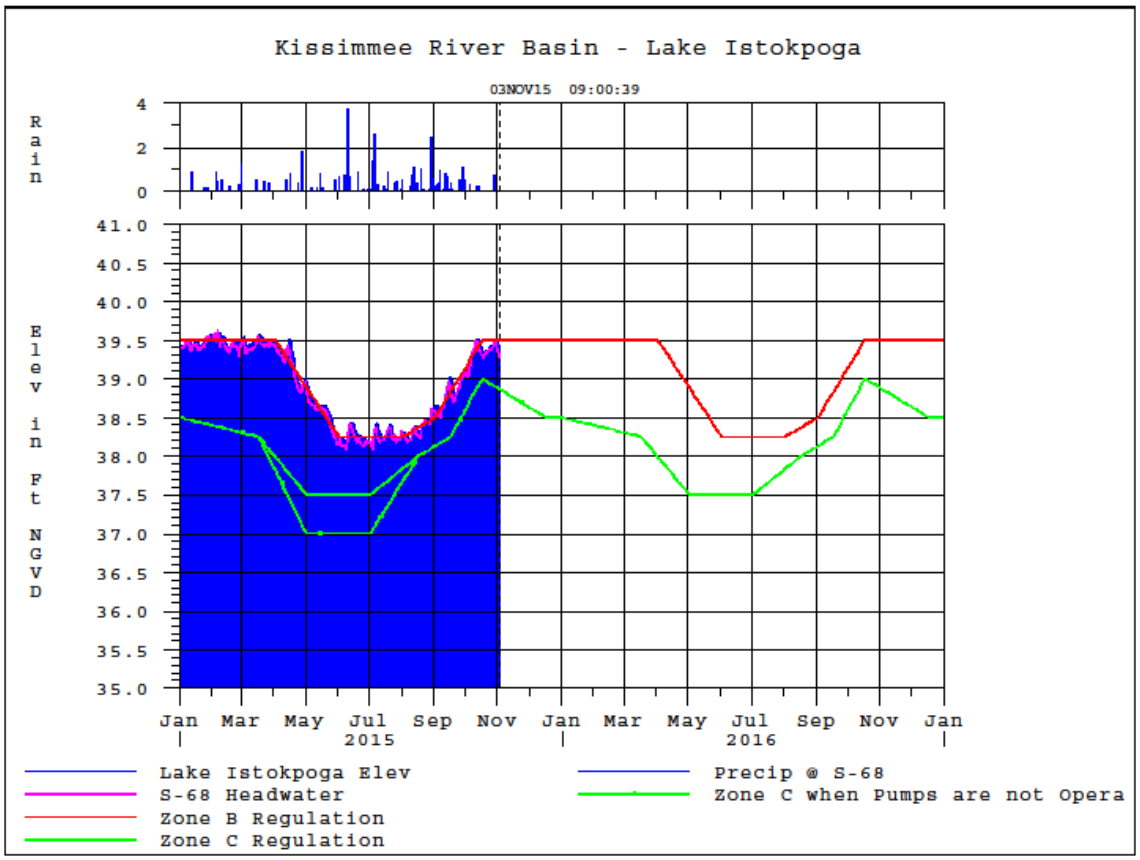



Figure 7

## ESTUARIES

### St. Lucie Estuary

Over the past week, provisional flows averaged 0 cfs at S-80, 143 cfs at S-308, 0 cfs at S-49 on C-24, 28 cfs at S-97 on C-23, and 87 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 111 cfs (Figures 1 and 2). Total inflow averaged about 226 cfs last week and 438 cfs over last month.

Over the past week, salinity in the estuary did not change significantly (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column is 18.0 at the US1 Bridge. Salinity conditions in the middle estuary remain the good range for the adult eastern oyster.

Table 1. Seven-day average salinity at three monitoring stations in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

| Sampling Site | Surface | Bottom | Envelope |
|---|---|---|---|
| HR1 (N. Fork) | **12.4** (13.0) | **16.3** (15.1) | NA[1] |
| US1 Bridge | **17.4** (17.0) | **18.6** (17.5) | 10.0-26.0 |
| A1A Bridge | **26.1** (27.2) | **28.7** (29.4) | NA |

[1]Envelope not applicable

**Caloosahatchee Estuary**

During the past week, provisional flows averaged approximately 883 cfs at S-77, 462 cfs at S-78, and 852 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 509 cfs (Figures 5 and 6). Total inflow averaged 1361 cfs last week and 1314 cfs over last month.

Over the past week, salinity increased throughout the estuary (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for oysters at Cape Coral and Shell Point, but within the fair range at Sanibel (Figure 9). The 30-day moving average surface salinity is 1.2 at Val I-75 and 3.9 at Ft. Myers. Salinity conditions at Val I-75 are in the good range for tape grass. However, if there were no discharges at S-79, daily salinity at Val I-75 would continue to increase, reaching about 9 in two weeks (Figure 10).

Table 2. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for tape grass (*Vallisneria americana)* at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

| Sampling Site | Surface | Bottom | Envelope |
|---|---|---|---|
| S-79 (Franklin Lock) | **2.2** (1.3) | **2.2** (1.3) | NA[1] |
| *Val I75 | **3.0*** (1.5*) | **3.7*** (3.0*) | 0.0-5.0[2] |
| Ft. Myers Yacht Basin | **7.7** (6.5) | **9.2** (9.5) | NA |
| Cape Coral | **14.6** (12.6) | **16.4** (15.4) | 10.0-30.0 |
| Shell Point | **26.7** (25.1) | **27.5** (25.8) | 10.0-30.0 |
| Sanibel | **30.8** (30.1) | **~31.6** (30.9) | 10.0-30.0 |

[1]Envelope not applicable, [2]Envelope is based on a 30-day average.
*Val I75 is temporarily offline due to bridge construction.
Salinity values are estimated using models developed for this site.

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 3 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary.

Table 3. Weekly ranges of Chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at three monitoring stations maintained by the Sanibel-Captiva Conservation Foundation.

| | RECON Monitoring Stations | | |
|---|---|---|---|
| | **Beautiful Island** | **Ft. Myers** | **Shell Point** |
| Chlorophyll *a* (µg/l) | NA | 3.9 – 8.2 | 2.0 – 7.3 |
| Dissolved Oxygen (mg/l) | NA | 4.8 – 7.4 | 4.6 – 6.7 |

The Florida Fish and Wildlife Research Institute reported on October 30, 2015, that a bloom of *Karenia brevis*, the Florida red tide organism, is currently present in and alongshore of Charlotte and Lee counties in Southwest Florida. *Karenia brevis* was detected in background to low concentrations in 25 samples collected in and alongshore of Charlotte and Lee counties. Respiratory irritation and fish kills were reported from some beaches in Southwest Florida this week.

## Water Management Recommendations

Lake Okeechobee's water level is within the Low Operational Sub-band; the tributary hydrological conditions are Normal; and the seasonal and multi-seasonal forecasts are Wet and Wet, respectively. The Lake Okeechobee Regulation Schedule (LORS) recommends releases up to 3000 cfs at S-79 and 1170 cfs at S-80.

Currently, the USACE is implementing a seven-day pulse release averaging 800 cfs at S-79 and 0 cfs at S-80. If releases are to be continued under LORS guidance, flows averaging 650~1200 cfs at S-79 will help maintain salinity conditions in the Caloosahatchee Estuary favorable for both tape grass downstream of I-75 Bridge (upper estuary) and adult oysters downstream of Cape Coral Bridge (lower estuary). Similarly, flows averaging 200~500 cfs at S-80 will not lower salinity beyond the favorable range for adult oysters downstream of US1 Bridge in the St. Lucie Estuary provided that watershed inflow continues to be low. The releases should be conducted in a pulse pattern to mitigate potential stratification and phytoplankton accumulation in the water column. Suggested pulse schedules are given below in Table 4.

Table 4. Schedules for 7-day pulse releases at S-80 and S-79

| | 7-day pulses at S-80 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Day | 200 cfs | 300 cfs | 400 cfs | 500 cfs | 650 cfs | 800 cfs | 950 cfs | 1170 cfs |
| 1 | 200 | 300 | 400 | 500 | 650 | 800 | 950 | 1290 |
| 2 | 600 | 700 | 800 | 900 | 1100 | 1200 | 1400 | 1800 |
| 3 | 300 | 500 | 650 | 800 | 900 | 1100 | 1200 | 1500 |
| 4 | 200 | 300 | 450 | 600 | 800 | 900 | 1100 | 1300 |
| 5 | 100 | 200 | 300 | 400 | 600 | 700 | 900 | 1000 |
| 6 | 0 | 100 | 200 | 300 | 400 | 600 | 700 | 800 |
| 7 | 0 | 0 | 0 | 0 | 100 | 300 | 400 | 500 |
| | 7-day pulses at S-79 | | | | | | | |
| Day | 650 cfs | 800 cfs | 1000 cfs | 1200 cfs | 1500 cfs | 2000 cfs | 2600 cfs | 3000 cfs |
| 1 | 1150 | 1300 | 1500 | 1700 | 2000 | 2500 | 3100 | 3500 |
| 2 | 1400 | 1700 | 1900 | 2100 | 2400 | 3100 | 3900 | 4300 |
| 3 | 900 | 1100 | 1600 | 1800 | 2100 | 2600 | 3400 | 3800 |
| 4 | 600 | 700 | 900 | 1100 | 1400 | 1900 | 2500 | 2900 |
| 5 | 400 | 500 | 700 | 900 | 1200 | 1700 | 2300 | 2700 |
| 6 | 100 | 300 | 400 | 600 | 900 | 1400 | 2000 | 2400 |
| 7 | 0 | 0 | 0 | 200 | 500 | 800 | 1000 | 1400 |

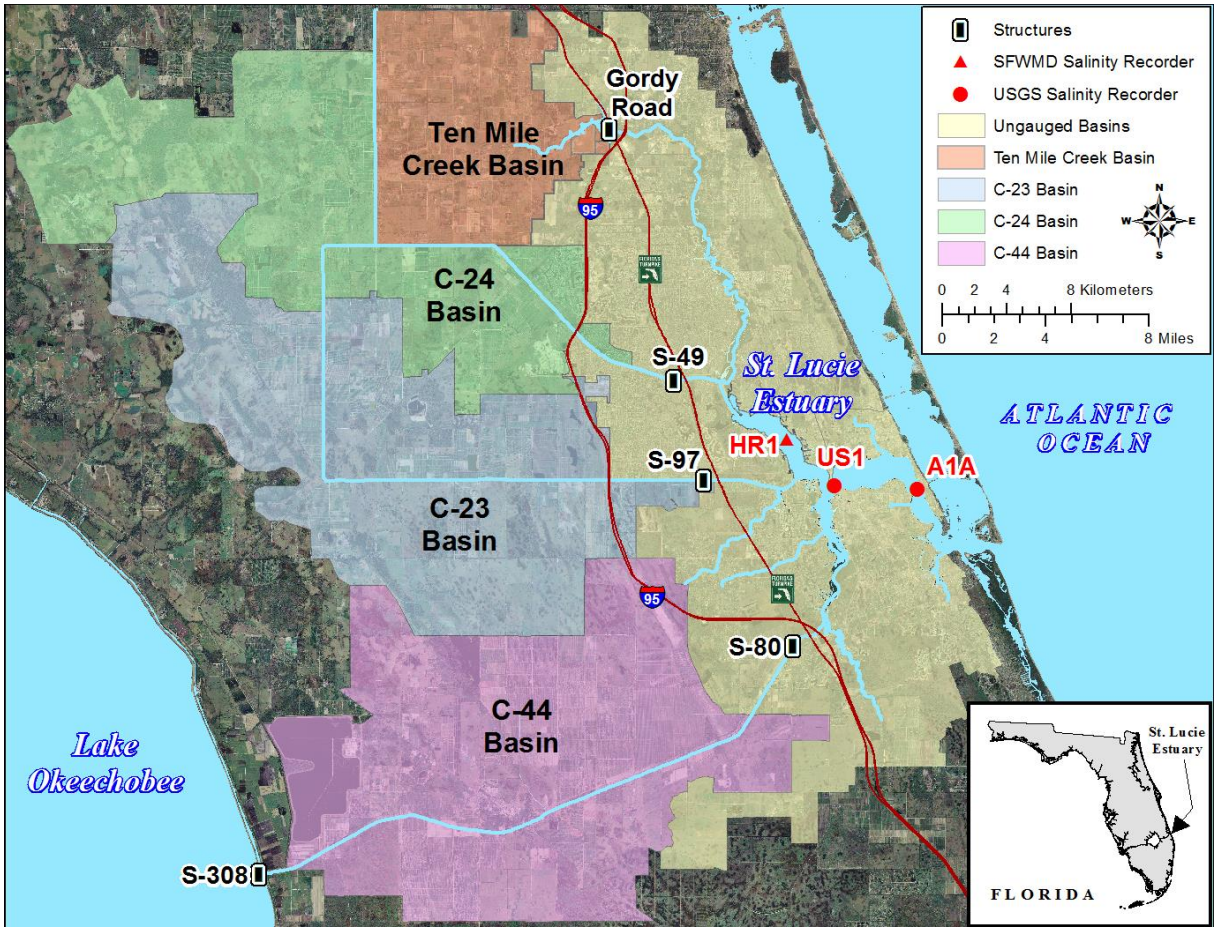



Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

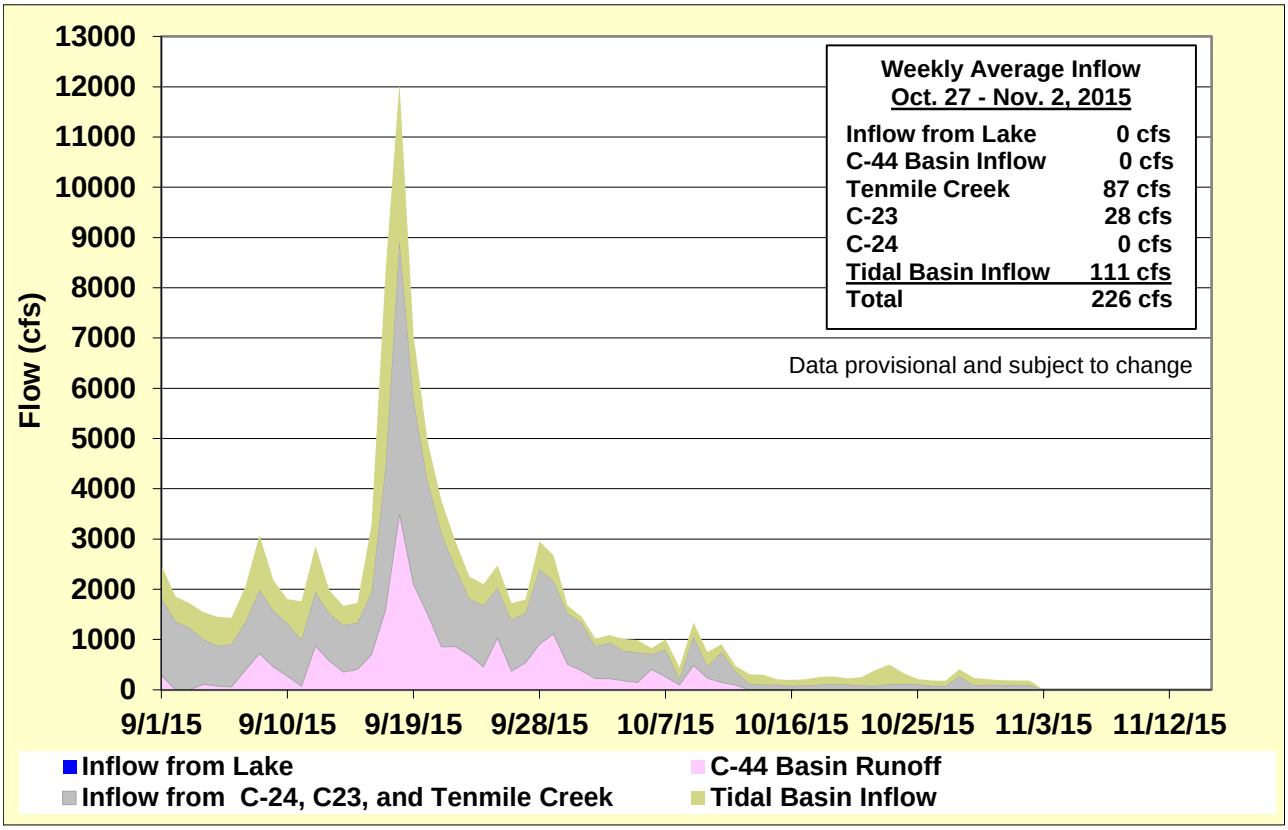



Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

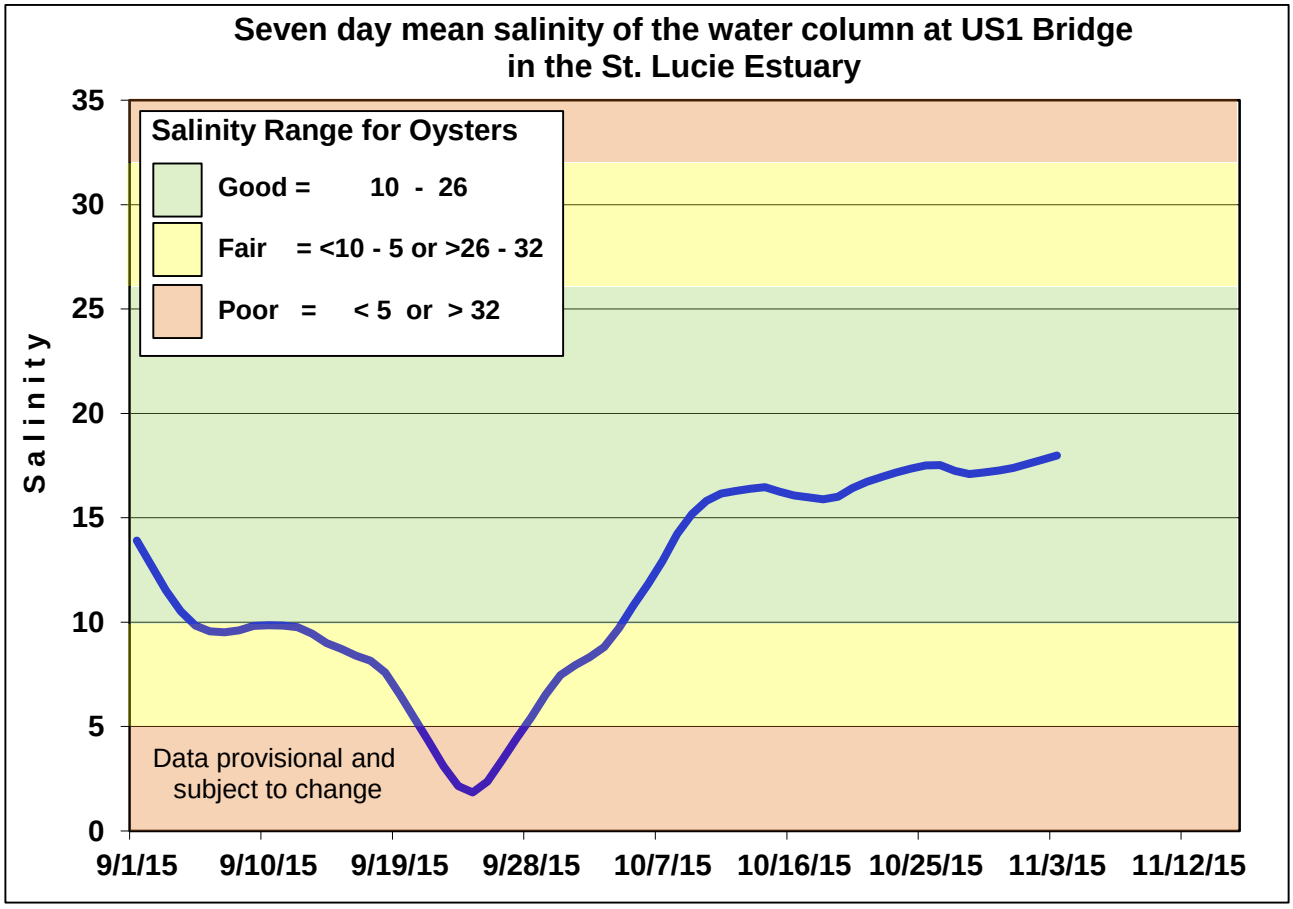



Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

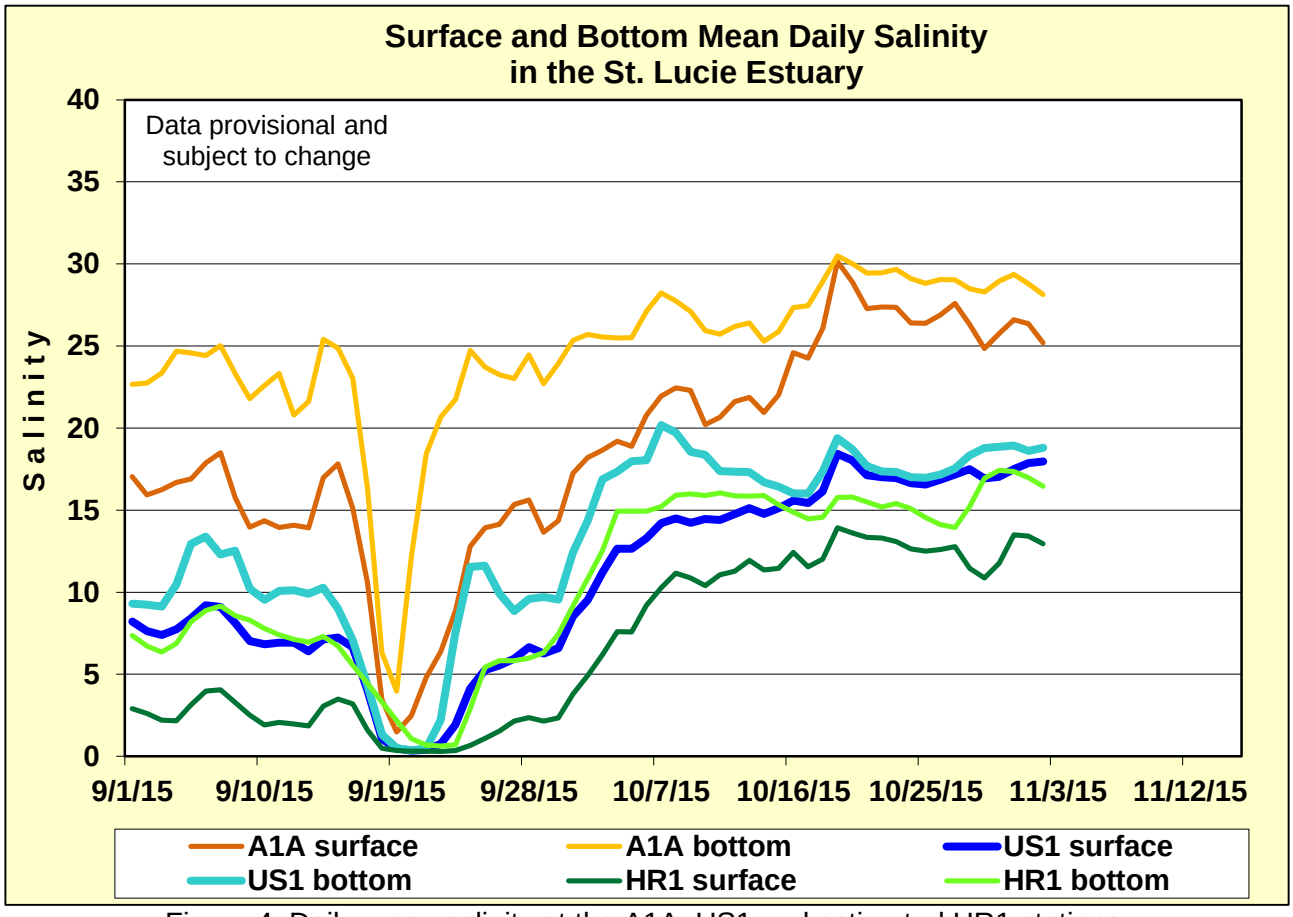



Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

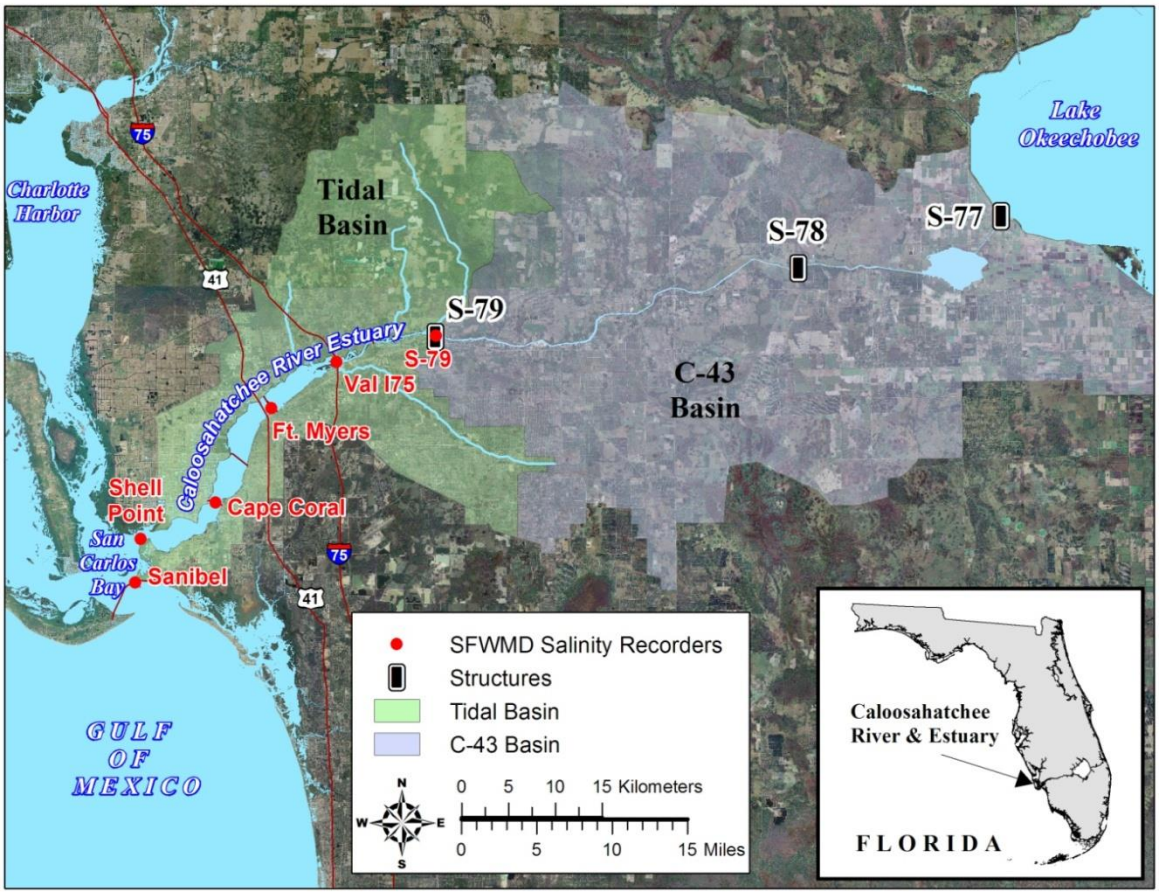



Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

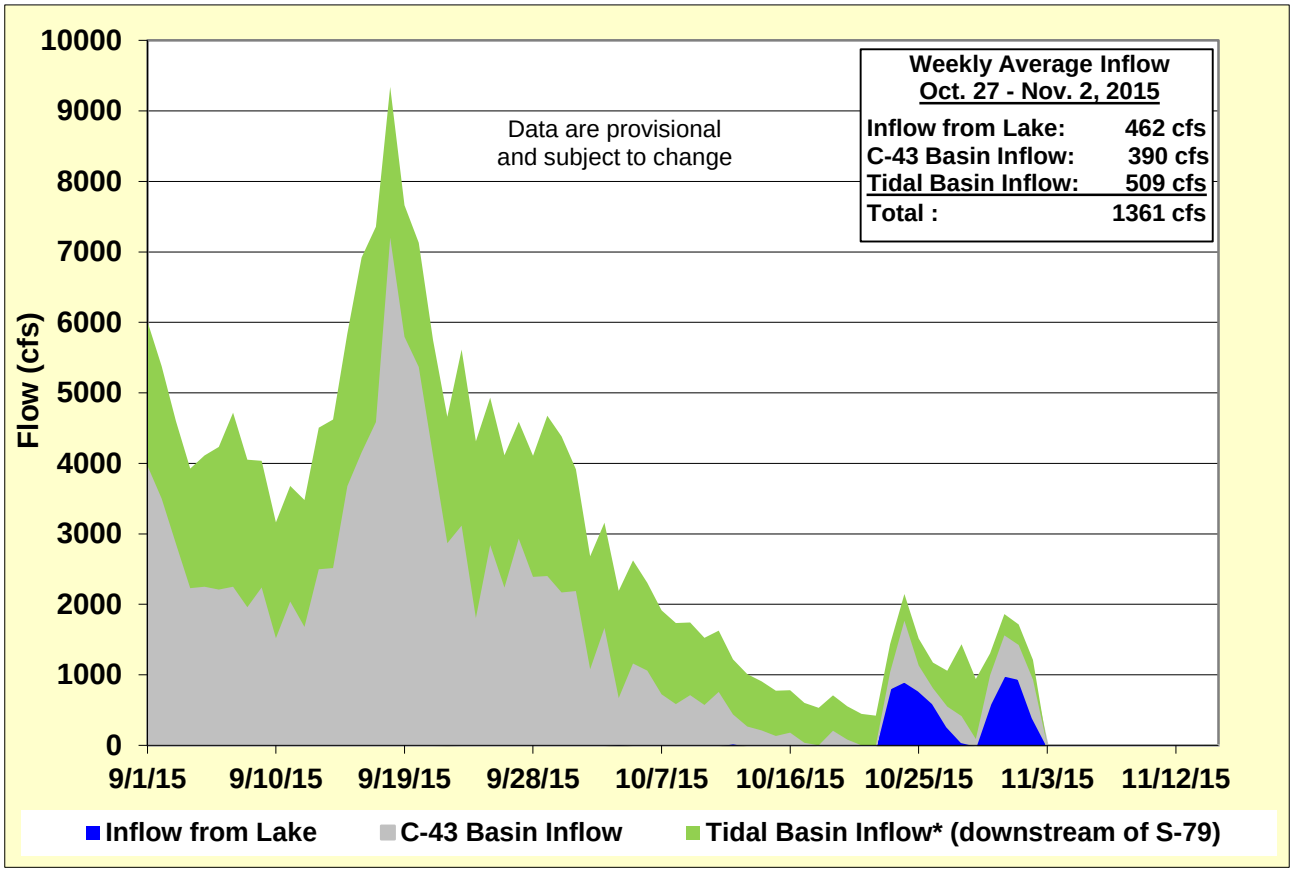
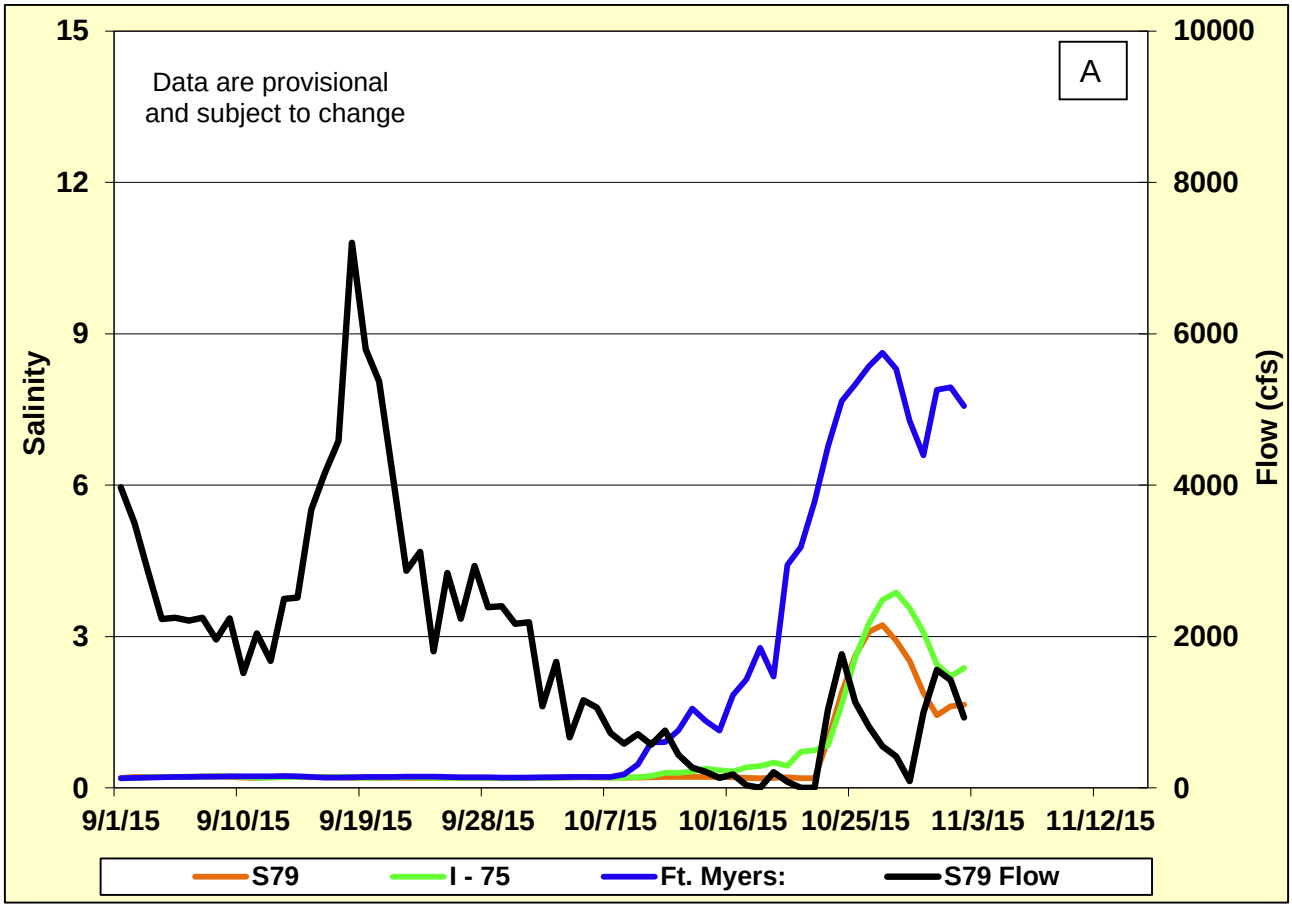



Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



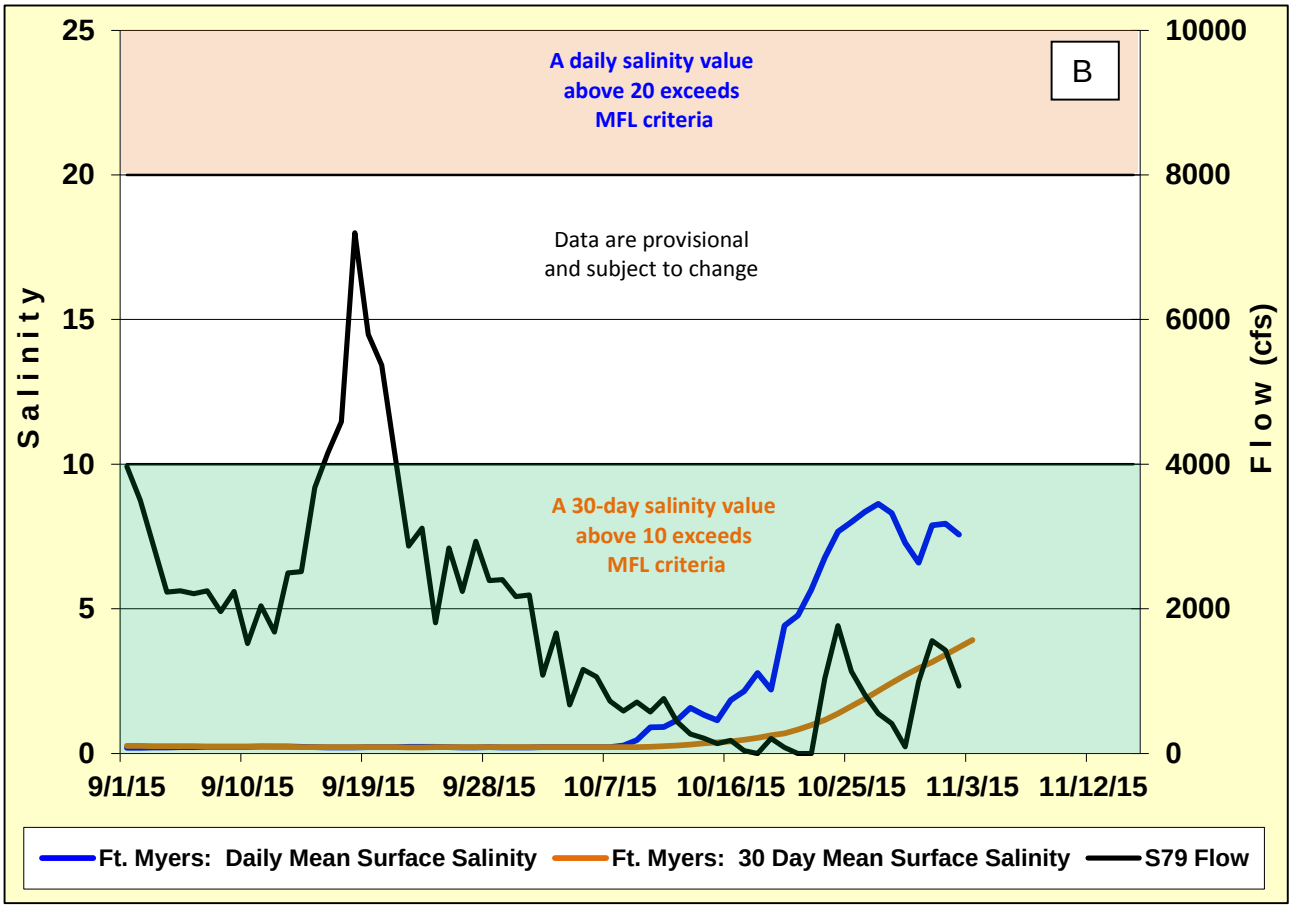




Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

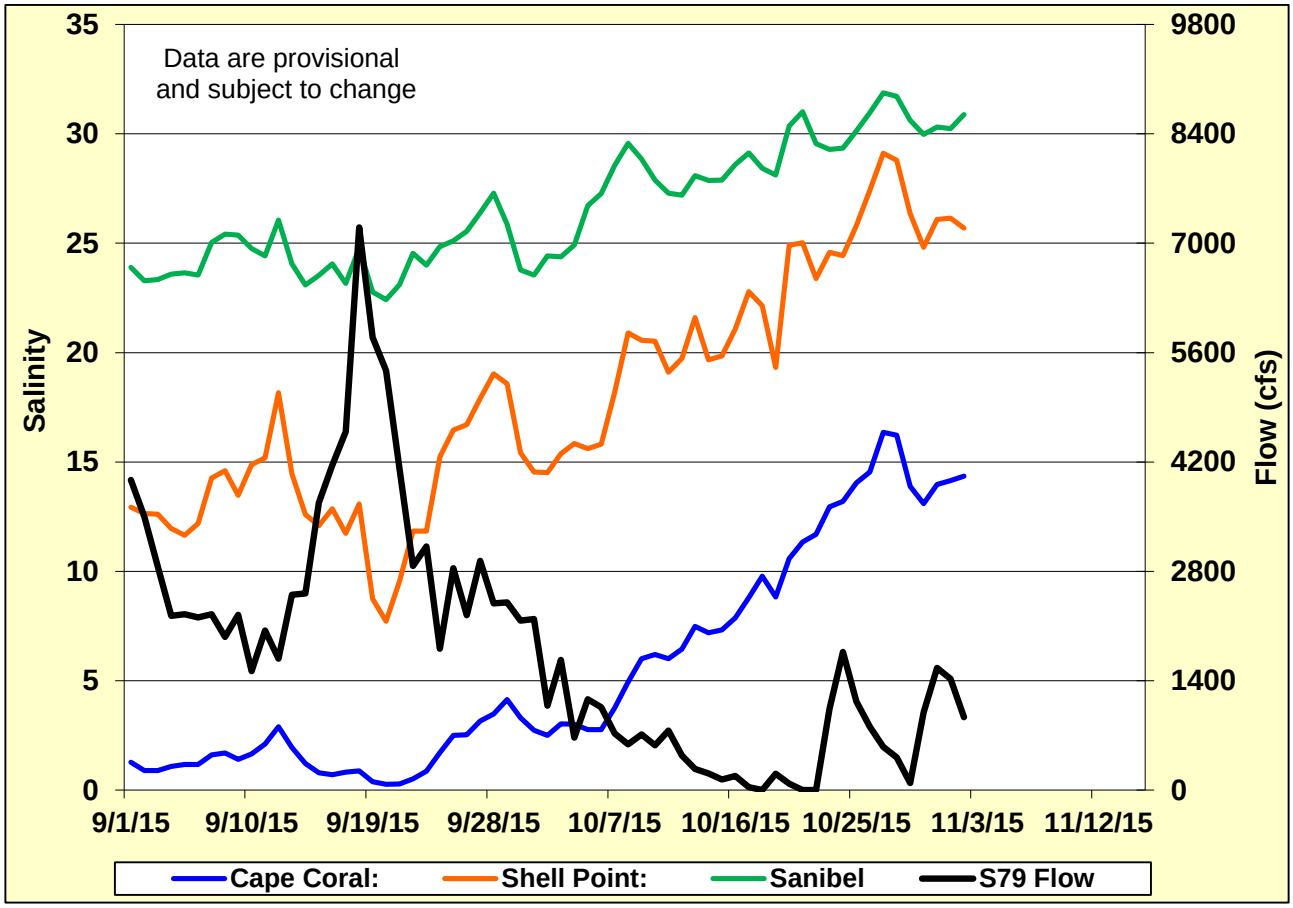



Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

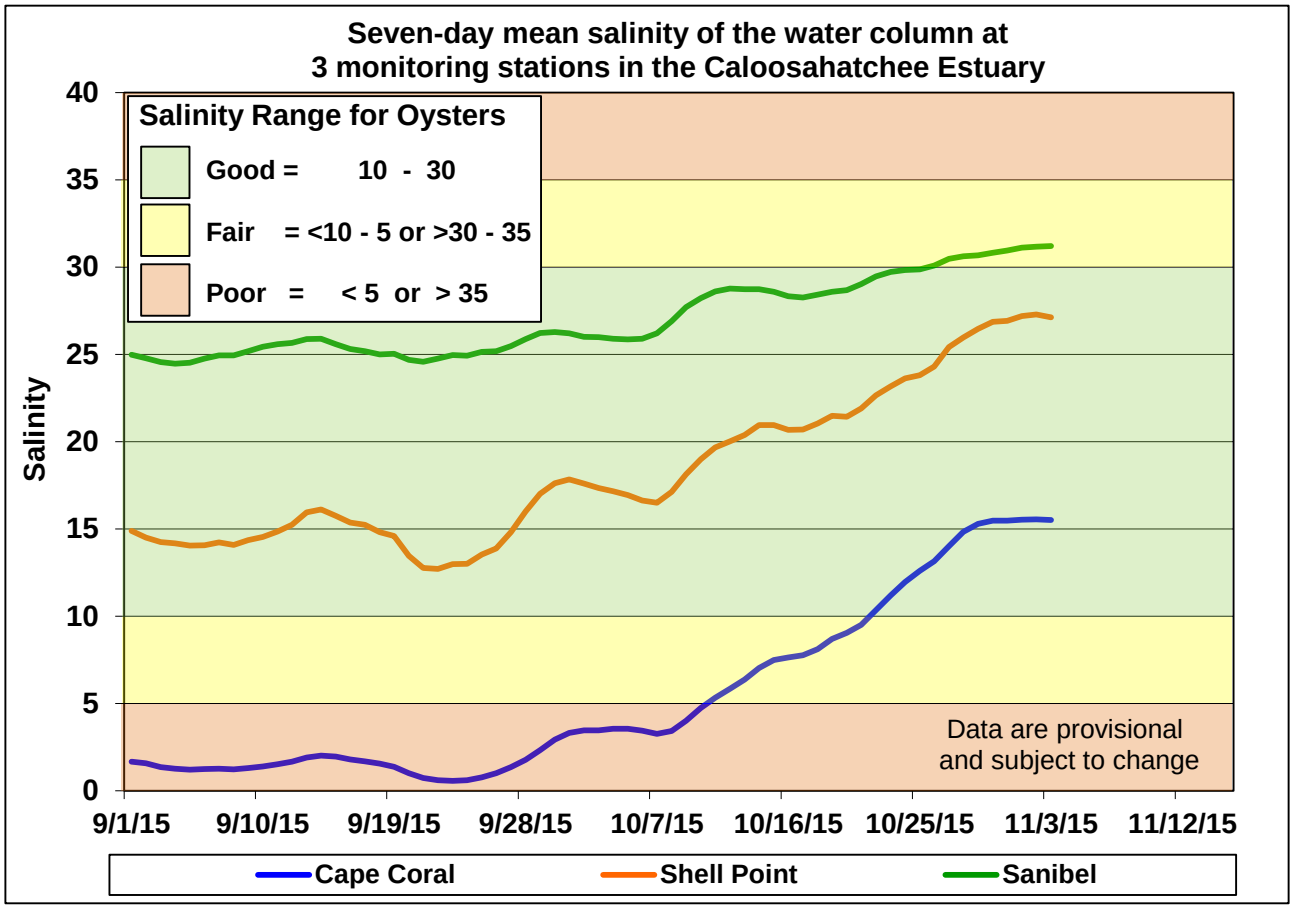



Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

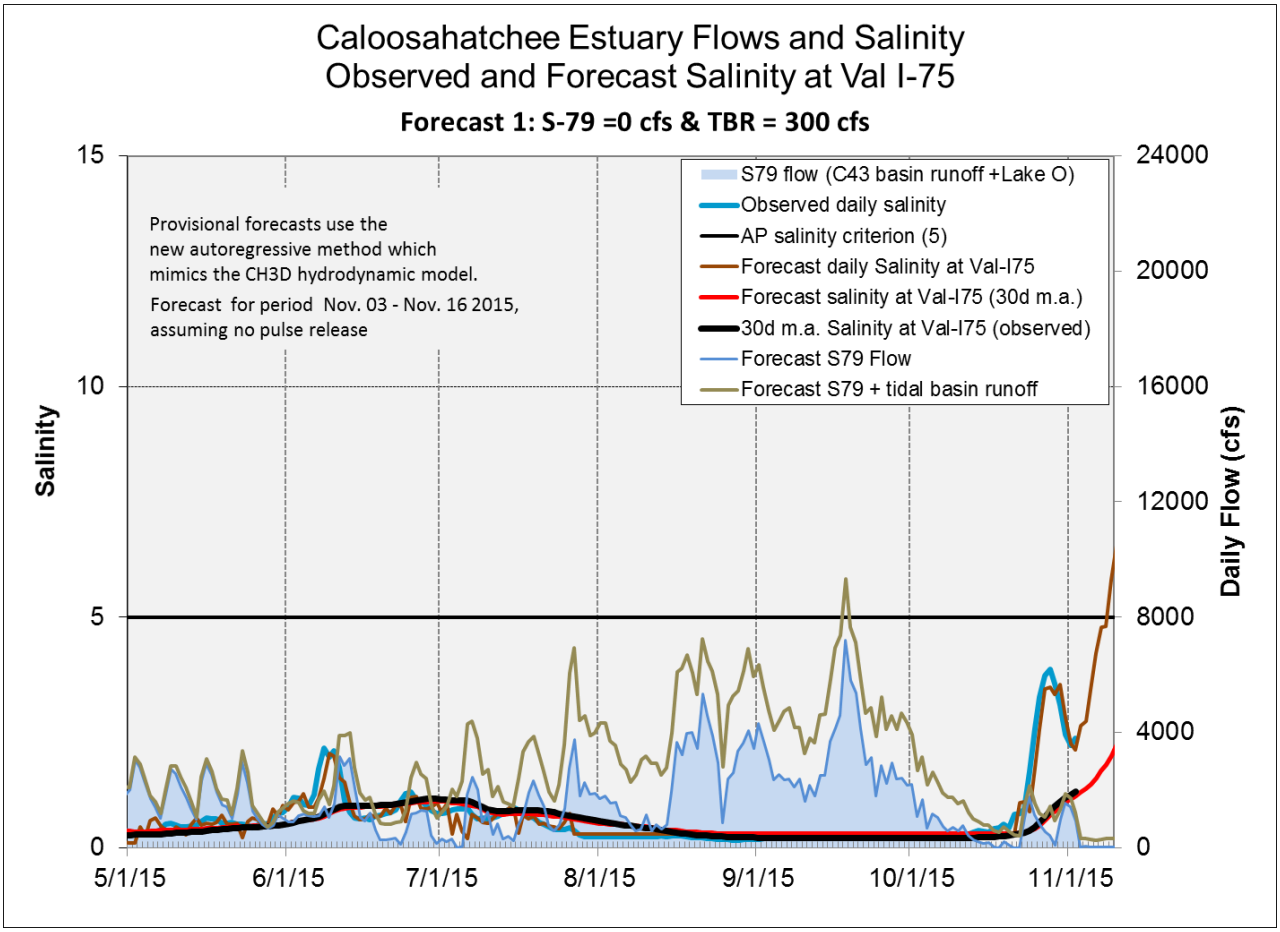
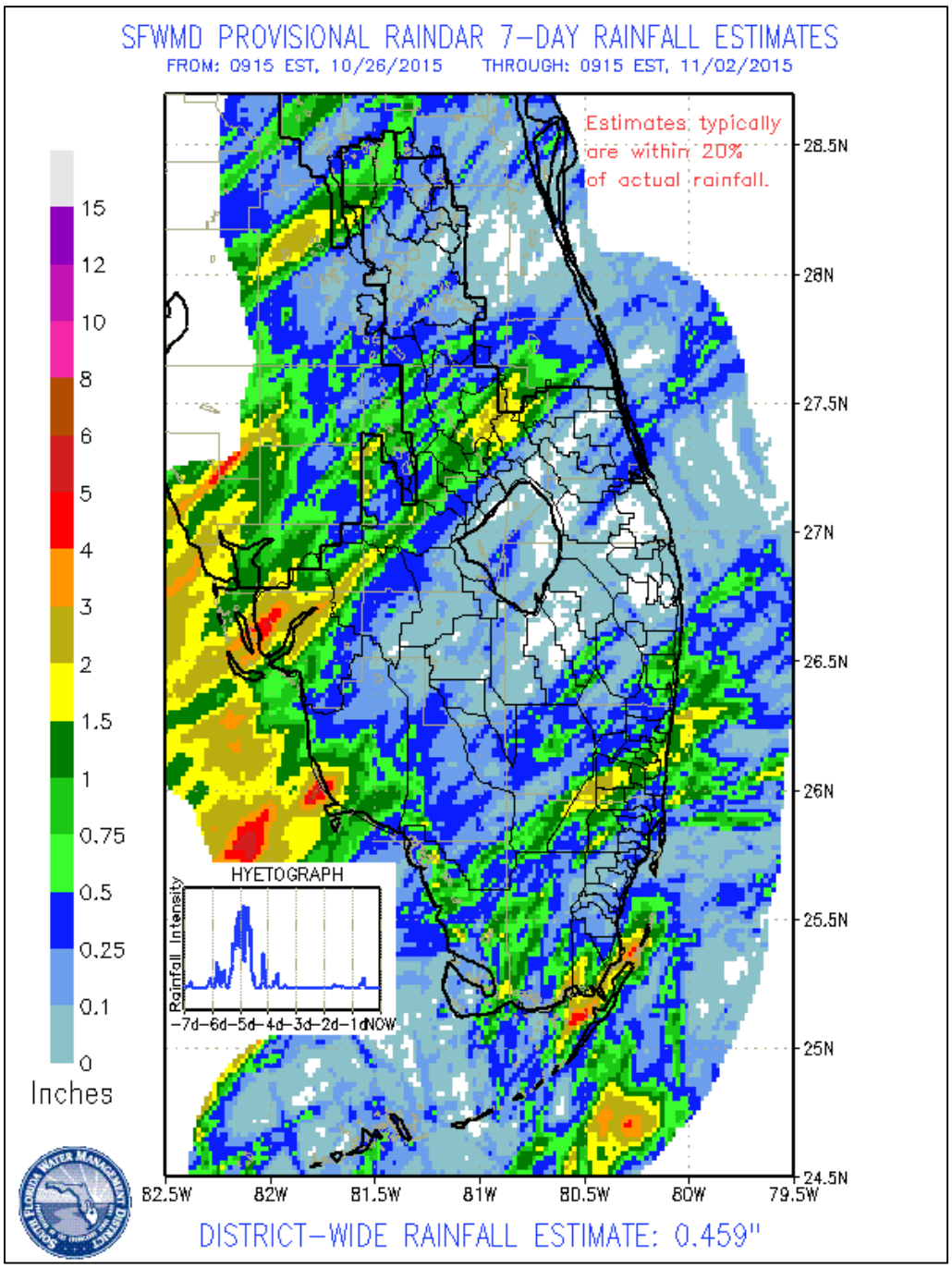



Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

## GREATER EVERGLADES

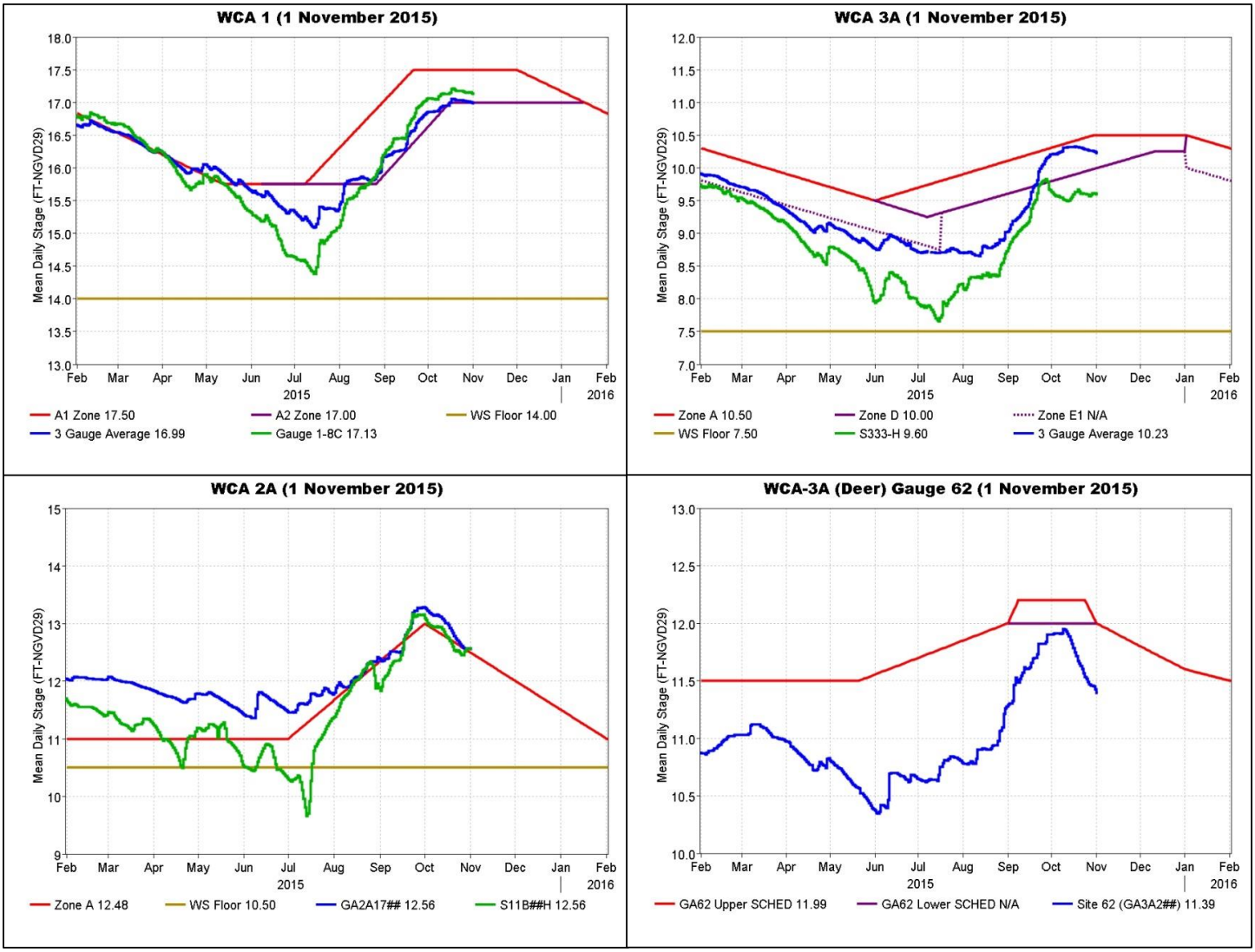
Rainfall was light with basin averages ranging from 0.22 inches to 1.06 inches. WCA-3B had the highest average (1.06 inches) for the past week. Basin-wide stage changes ranged from -0.08 feet to 0.12 feet and the maximum local rainfall of 3.12 inches fell in Everglades National Park (ENP). Pan evaporation is 1.02 inches, equal to the pre-project average.

| Everglades Region | Rainfall (Inches) | Stage Change (feet) |
|---|---|---|
| WCA-1 | 0.22 | -0.05 |
| WCA-2A | 0.28 | -0.07 |
| WCA-2B | 0.37 | 0.04 |
| WCA-3A | 0.40 | -0.08 |
| WCA-3B | 1.06 | 0.12 |
| ENP | 0.58 | -0.02 |




Regulation Schedules

Stages declined or remained about the same at the regulation schedule sites last week. WCA-1 stage is almost at the Zone A2 line. The WCA-2A stage is 0.08 feet above the declining regulation line. In WCA-3A, the three-gauge average stage is 0.27 feet below regulation and remains in Zone D. The water level at the northwestern WCA-3A gauge stage (gauge 62) decreased again and is 0.61 feet below the lower regulation schedule.



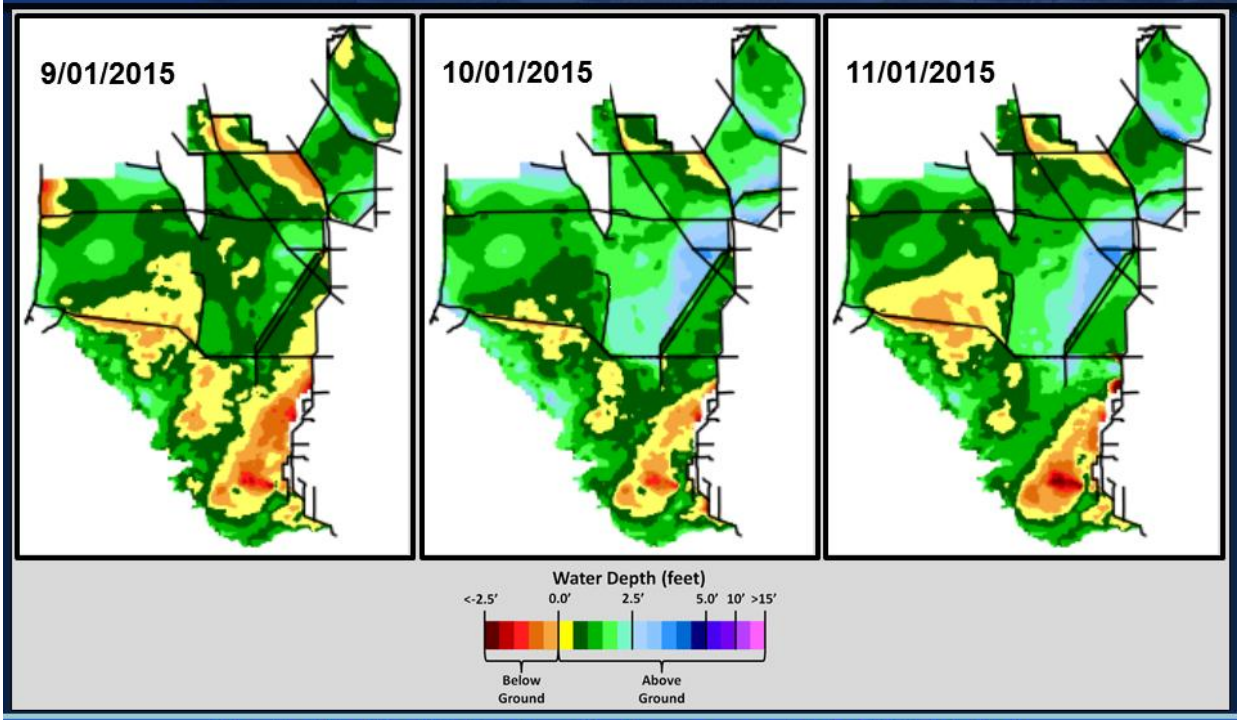

Water Depths and Changes

Water levels in the WCAs and ENP are mixed relative to one and two months ago and have decreased in WCA-2A and much of WCA-3A and the Wildlife Management Areas. Water depths at the monitored gauges range from 1.22 feet (WCA-3B) to 2.39 feet (WCA-3A), excluding WCA-2B.

Stage changes were mixed relative to a week ago with lower stages to the north and higher stages in the southern WCAs and ENP. Compared to a month ago, differences are up to one foot higher or lower, and mixed relative to a year ago. Individual stage gauge changes last week ranged from -0.20 feet to 0.24 feet, similar to the previous week.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

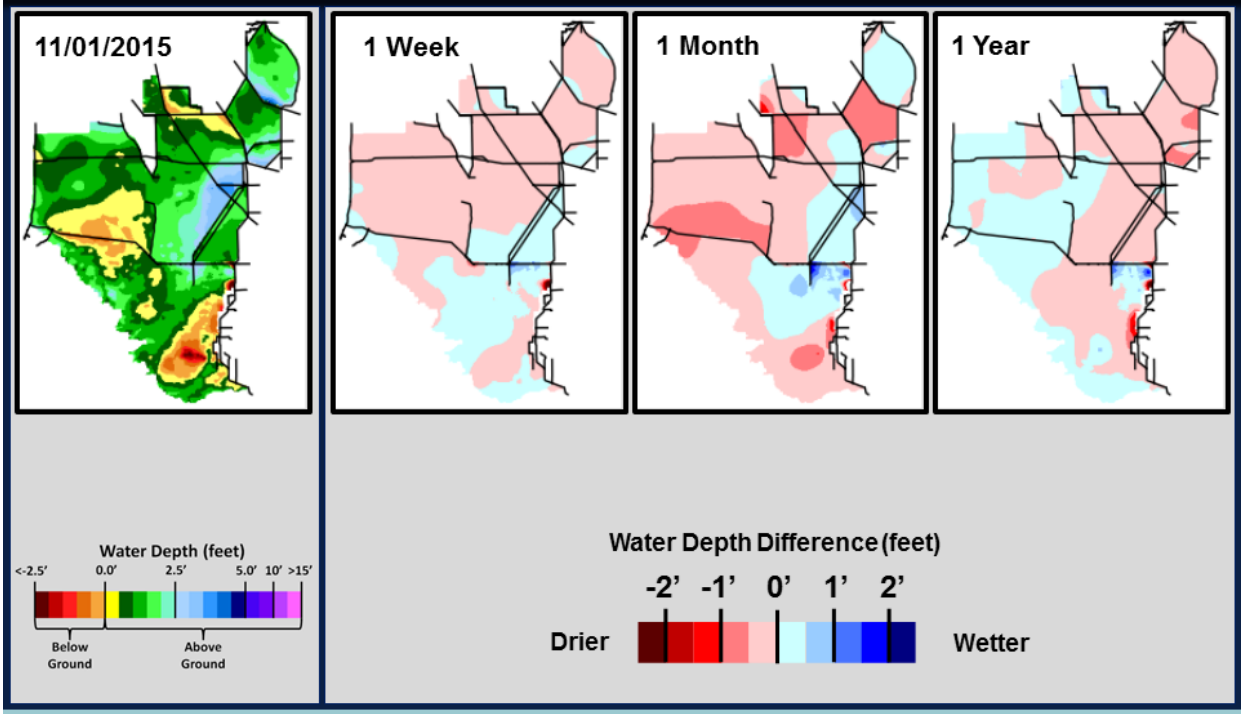
# SFWDAT Water Depth Monthly Snapshots




South Florida Water Depth Assessment Tool (SFWDAT)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

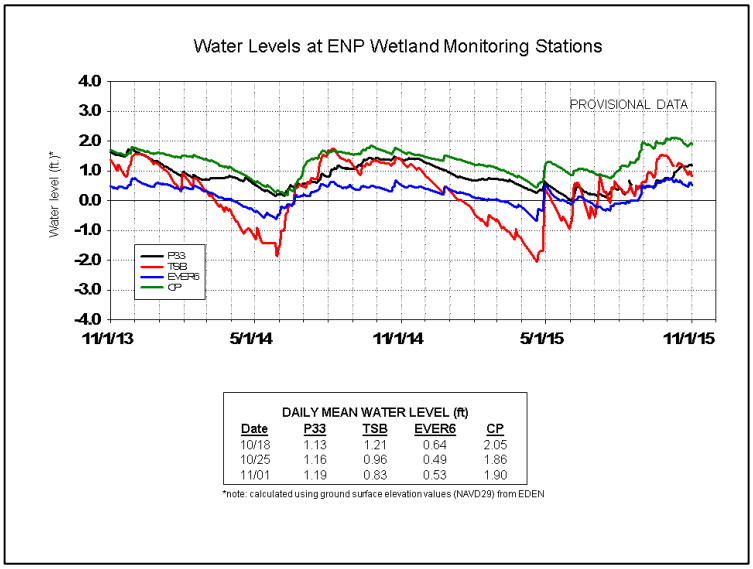
# SFWDAT Everglades Difference Maps (Present – Past)




South Florida Water Depth Assessment Tool (SFWDAT)

Everglades National Park (ENP) and Florida Bay

Water levels are higher than a week ago in southern Taylor Slough and the ENP panhandle, but lower in northern Taylor Slough, where they are five inches below average. In southwestern Taylor Slough, the stage is two inches above average. As water pushed upstream this week, the stage rose near the shoreline, but was decreasing again by the end of the week.



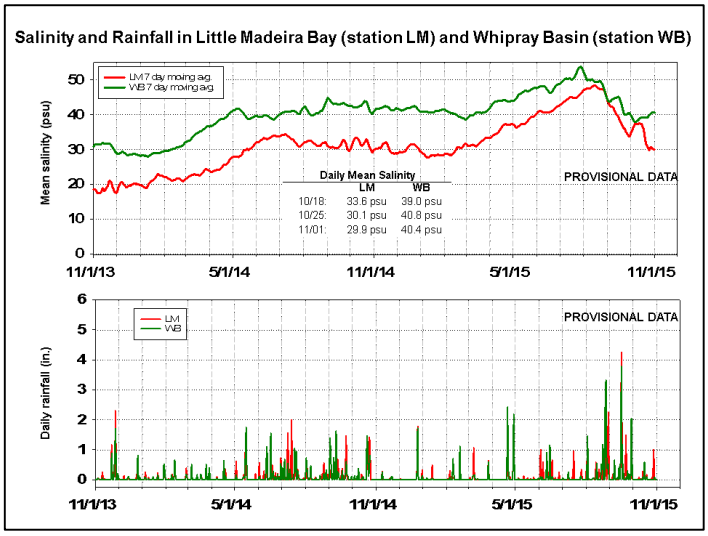

DAILY MEAN WATER LEVEL (ft)

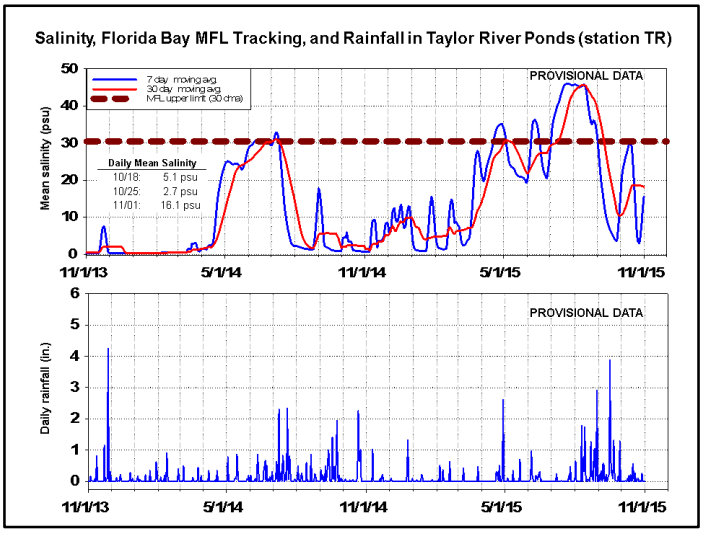
| Date | P33 | TSB | EVER6 | CP |
|---|---|---|---|---|
| 10/18 | 1.13 | 1.21 | 0.64 | 2.05 |
| 10/25 | 1.16 | 0.96 | 0.49 | 1.86 |
| 11/01 | 1.19 | 0.83 | 0.53 | 1.90 |

*note: calculated using ground surface elevation values (NAVD29) from EDEN

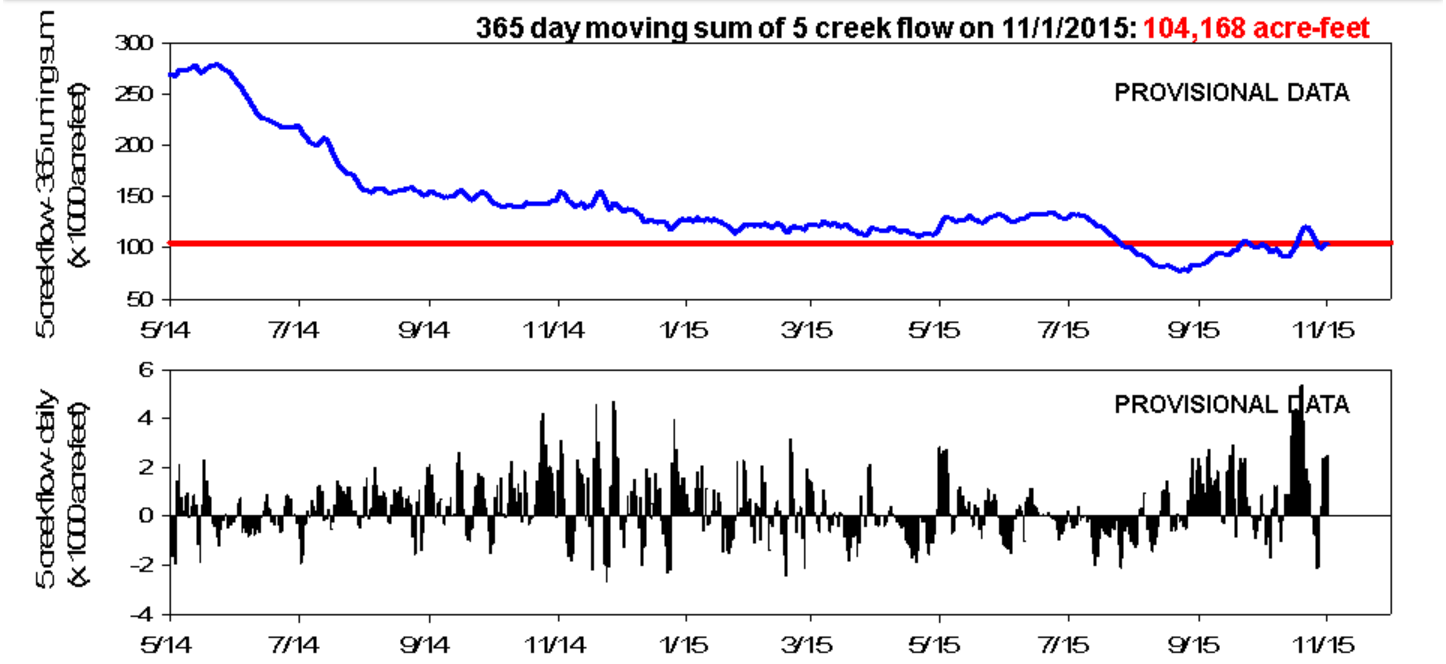
This week's report is expanding westward to include Garfield Bight and Johnson Key Basin, both of interest over the summer and fall. Following rainfall, salinities generally increased in central and western Florida Bay and decreased in the eastern Bay. Salinities remain seven to 22 psu above average for this time of year. The daily average salinity at the MFL sentinel site of TR increased to 21.4 psu on Friday, and then decreased to 16.1 psu on Sunday. The 30-day moving average salinity decreased to 18.1 psu.

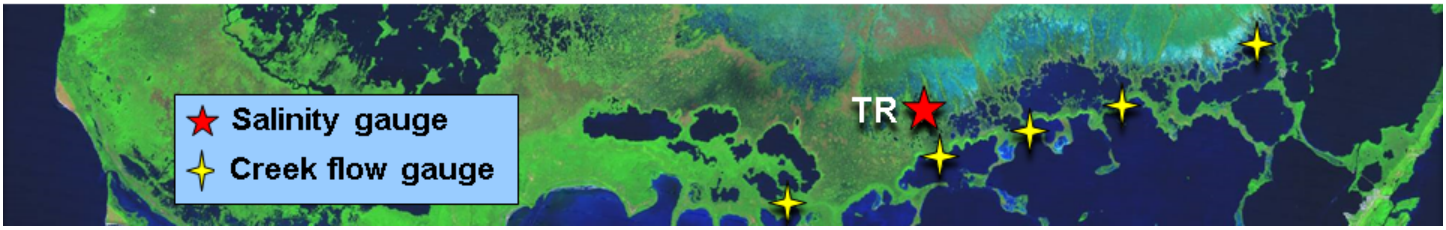
The 365-day running sum cumulative flow from the five creeks feeding Florida Bay decreased again to 104,168-acre feet, below the 105,000-acre feet MFL criterion. Daily differences in the 365-day running sum of the cumulative flow from these creeks represent the difference between current daily flow and flow a year ago. Cumulative flow from the five creeks for the last week was 2,720-acre feet, far less than that of the week before of 19,211 acre-feet. Creek flow data are provisional.



## 5 Creek Cumulative Flow and Florida Bay MFL Flow Criteria Tracking




**Water Management Recommendations**

- We recommend moving as much water south into ENP and Florida Bay as possible and for as long as possible.

Site-specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

# Summary of Everglades Recommendations, Nov. 2, 2015 (SFWMD) (red is new text)

| Area | Current Condition | Cause(s) | Recommendation | Reasons |
|---|---|---|---|---|
| **WCA-1** | Stage decreases ranged from -0.04' to -0.06' | Rainfall, ET, management | Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days. | Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species and to take advantage of rain events. |
| **WCA-2A** | Stage decreased -0.07' | Rainfall, ET, management | Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days. | Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species and to take advantage of rain events. |
| **WCA-2B** | Stage increases ranged from 0.03' to 0.05' | Rainfall, ET, management | Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days. | High stages generally preclude wading bird use, but can provide good habitat for wading bird foraging as stages drop at the end of the dry season. |
| **WCA-3A NE** | Stage decreased -0.20' | Rainfall, ET, management | Water levels in northeastern WCA-3A are now above ground. Continuing releases into far northeastern 3A can continue as desired. Average water stage of gauges 62 and 63 should remain under 11.60 feet (10.96' on 11/2) for terrestrial wildlife. | Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and also to allow taking advantage of rain events. |
| **WCA-3A NW** | Stage decreased -0.12' | Rainfall, ET, management | | |
| **Central WCA-3A S** | Stage did not change | Rainfall, ET, management | Continue to move water into WCA-3A. El Nino conditions will probably produce higher than normal dry season stages. The wet season stage target was 10.67 3AVG by Oct 30 (10.22' on 11/2). | Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and take advantage of rain events. |
| **Southern WCA-3A S** | Stage increased 0.01' | Rainfall, ET, management | | |
| **WCA-3B** | Stages increased from 0.04' to 0.24' | Rainfall, ET, management | Recommend ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days. | Promote native habitat and maintain wetland plant communities. Provide foraging habitat for wading birds. |
| **ENP-SRS** | Stage decreased -0.02' | ET, rainfall, topography, management | Make discharges to the Park according to the ERTP rainfall plan. Water deliveries to Shark Slough should be made through S-333, then through S-12D and S-12C. | Promote native habitat and maintain wetland plant communities. |
| **ENP-CSSS habitats** | Nesting is complete. Conditions are now wet. | Rainfall, ET, management | Follow rainfall plan for releases | Provide habitat and appropriate nesting conditions for CSSS. |
| **Taylor Slough** | 5 inches below average in the north to 2 inches above average in the southwest | Rain, ET, inflows | Move water southward as possible | Provide freshwater buffer for ecosystems and freshen saline conditions downstream |
| **FB- Salinity** | Still 10-22 psu above average | Rain, ET, inflows, wind. | Move water southward as possible | Southward flows are still needed to reverse/slow salinity increases |